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SURGICAL CONSIDERATIONS OF GALLBLADDER DISEASE

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It is my purpose to review the more common types and phases of cholecystic disease and its associated pathology, with especial reference to the surgical treatment of these conditions. My remarks will therefore be directed mainly at surgery of the gallbladder in relation to cholecystitis, cholangitis, and hepatitis. Obstructive jaundice and lesions of the common duct will not be considered. Before entering this discussion I wish to present a short resume of the history of gallbladder surgery.

The progress of medicine and surgery during the past three decades is unparalleled in history. This is especially true of the progress of surgery of the biliary tract. The foundation of this progress dates back to the fourteenth century, when gallstones were first identified. Operative experiments on the gallbladders of living animals began in the seventeenth century, but the first deliberately planned operation for removal of stones did not occur until four hundred years after they were discovered. This operation was performed by Petit, in 1743. However, it was limited only to cases in which the gallbladder was adherent to the abdominal wall. Another hundred years elapsed before further advances were made. Then, in 1859, the two-stage cholecystostomy was proposed (Thudichum); the gallbladder was first sutured to the abdominal wall and subsequently opened. Eight years later an American surgeon (Bobbs) performed the first one-stage cholecystostomy, by mistake. He thought he was operating an ovarian tumor. The first planned cholecystostomy was done by Marion Sims, 1878, but unfortunately the patient died nine days after the operation. Kocher performed this operation successfully in June of the same year and was followed by Lawson Tait and Keen. These men practised the operation repeatedly, with good results. Four years later Langenbuch did the first cholecystectomy. And then the argument started. Lawson Tait strongly opposed cholecystectomy and characterized the operation as "intrinsically absurd." For this reason English surgeons were rather slow, at first, in adopting cholecystectomy.

Through the efforts of such leaders as the Mayos, Moynihan, Judd, Deaver, and others, with their early recognition of the importance of infection in the wall of the gallbladder and its lymyphatics, cholecystectomy was gradually substituted for cholecystostomy (in chronic cases) and present-day technic of these operations was perfected.

The great progresss in successful management of biliary disease has by no means been limited to surgery. Equally important is the classic work of Mann on the physiology of the liver, the physiologic studies of McNee, Van den Bergh, and others, the bacteriologic studies of Rosenow and his associates, the pathologic studies of MacCarty, Graham, Judd, Wilkie, Boyd and others, and the brilliant contribution, cholecystography, by Graham and Cole. These outstanding achievements need no further comment.

Various classifications and types of cholecystitis are described in the text-books and literature. From a surgical viewpoint however, the subject can be discussed satisfactorily under the two main divisions (1) acute and (2) chronic.

ACUTE CHOLECYSTITIS

Acute cholecystitis usually offers little difficulty in diagnosis. We are all familiar with the picture. The sudden onset may or may not be accompanied by a chill. The pain characteristically begins in the right upper quadrant and radiates to the right sub-

scapular region. It is often most severe, especially if stones are present, and the patient writhes in extreme distress. Repeated injections of opiates may be necessary for relief. Nausea and vomiting are almost always present. The temperature is usually normal or subnormal at first, but rises slightly (101°-102°) after the paroxysm of pain has subsided. Tenderness and involuntary rigidity in the right hypochondrium is the rule, and jaundice is slight or absent. When present it is usually transient. There is a moderate increase in leukocytes. The pain in acute cholecystitis may last a few minutes or several hours, and often ceases as suddenly as it began. In the right upper abdomen, however, there remains a marked residual soreness which lasts several days. This feature is pathognomonic.

There are several conditions that are sometimes difficult to differentiate from acute cholecystitis, particularly when the latter is atypical in its manifestations: (1) Right-sided pneumonia, (2) coronary disease, (3) renal colic or acute pyelitis of the right kidney, (4) acute appendicitis (which is especially difficult when the pain is referred to the right lower quadrant or when the tip of the appendix lies high near the liver), (5) certain types of perforated peptic ulcer. Usually a perforated ulcer can be differentiated by the history, the accompanying shock, and by the board-like rigidity of the abdominal wall, but this does not always hold true. I refer particularly to the chronic or subacute perforation that is closed or walled off temporarily by omentum.

CHRONIC CHOLECYSTITIS

Unlike the acute form, chronic cholecystic disease often presents a complicated clinical picture. The symptoms at times are most baffling. Few organic lesions are so common and withal so varied in symptomatology. As regards its frequency, it is second only to appendicitis in the list of chronic abdominal diseases. It manifests its entity by symptoms which are primarily (1) local, or (2) reflex, or referred.

In the local type, the patient commonly complains of recurring pains or aches in the gallbladder region, of varying degrees of intensity. The pain may or may not be referred. Following the attacks, the characteristic residual soreness occurs. The latter is usually not as marked as in the acute type, and may be registered only as a sense of discomfort or tenderness under the right costal margin, or in the right epigastrium. It is almost always increased by physical exercise, jarring or jolting, and is more pronounced after eating a full meal. When the gallbladder alone is affected, jaundice is seldom present in chronic cholecystitis. There are two conditions, however, in which it has been discovered, although exploration of the common duct was negative (Judd): (1) when a stone becomes impacted in the cystic duct and lies in such a position as to occlude the common duct by pressure, and (2) during a severe attack of biliary colic, as the result of an associated hepatitis or cholangitis. Digestive disturbances may occur but are frequently absent. When present, these symptoms are secondary, and remain more or less in the background, overshadowed by the primary complaint of pain.

The converse is true of the reflex type. Digestive upsets dominate the picture, and pain is the exception rather than the rule. The stomach usually bears the brunt of the attack in this type of cholecystitis. The symptoms are often quite characteristic and sufficiently constant to form a syndrome of diagnostic value. The tendency is toward constancy rather than intermittency. Qualitative food distress is almost invariably present. A common complaint is the inability to eat fried, greasy, or fatty foods, highly acid foods, raw fruits, pickles, cabbage and salads. The distress is entirely in the upper abdomen and the symptoms usually occur immediately after meals. At this time the patient complains of fullness or distention, with a feeling of pressure in the epigastrium regardless of the amount of food eaten. Bloating and belching is the rule. There is a burning distress in the stomach, with acid eructations which are relieved temporarily by soda. As the food passes along and the upper digestive tract is emptied, the symptoms tend to improve. In the milder cases they may disappear entirely until the next meal.

Associated Pathology. There are gross changes in the liver that are inevitably present in long-standing cases of chronic cholecystitis. This was first pointed out by Graham in 1918. Now it is a familiar picture to most surgeons. The liver is mottled, swollen, and scarred. Its normal wedge-like edge is often rounded, edematous, and friable; occasionally it is thin, fibrosed, and tough. While these inflammatory changes are most marked in the vicinity of the gallbladder, they extend diffusely throughout the liver parenchyma. This is explained by the dense lymphatic anastomoses and the venous connection between the gallbladder and liver. Although these liver changes are usually secondary to gallbladder infection, hepatitis may be the primary lesion. This may be explained by the fact that it is possible for lymph to pass in both directions between the gallbladder and the liver. It also suggests that most

biliary infection spreads by way of the lymphatics. Regardless of the pathogenesis, the important thing to remember is that, although this type of hepatitis is mild and progresses slowly, if allowed to continue over a period of years, a severe cholangitis, and even biliary cirrhosis, will result.

In certain cases of prolonged biliary disease, we find a secondary pancreatitis at operation. The head of the pancreas is usually large, irregular, and hard—the so-called interlobular or interstitial pancreatitis. The islands of Langerhans are seldom involved. In these cases, however, there may be symptoms of biliary colic after the gallbladder has been removed.

Attention has been drawn to the frequency with which chronic appendicitis is associated with gallbladder disease. One investigator (Larimore) studying a large series of cases, found that 14 per cent of the patients with chronic cholecystitis had been operated upon previously for appendicitis; 50 per cent showed appendiceal involvement (x-ray diagnosis), and only 36 per cent showed no evidence of appendiceal pathology.

I have not discussed cholelithiasis because whether or not stones are present in the diseased gallbladder, is beside the point. It has been clearly and conclusively demonstrated that the primary seat of the trouble is not the stones but the infection that lies within the walls of the gallbladder.

TREATMENT

Practically all attacks of acute cholecystitis subside spontaneously. Rest in bed, an ice-bag over the gallbladder region, plenty of fluids with carbohydrates and alkalies, and sedatives as necessary for relief of pain, usually suffice. Perforation rarely occurs except in the typhoid and gangrenous types, and both of these are relatively rare. Surgery is, therefore, seldom necessary during the acute attack. It is usually reserved for cases that fail to subside under supportive treatment and for the gangrenous toxic type, in which the progressive symptoms point to impending disaster. One should carefully consider the evidence for and against operation in such cases, then choose the lesser of the two evils. Cholecystostomy is usually the operation of choice when surgical interference is necessary. Exploration is justified in those cases which simulate acute appendicitis or perforating peptic ulcer so closely as to be indistinguishable from these conditions. Generally speaking, it is wise to "make haste slowly" in operating acute gallbladders.

In view of the fact that the primary site of infection in chronic cholecystitis is in the gallbladder wall, the logical treatment is cholecystectomy. One cannot remove the infection by surgical drainage. While good results have followed cholecystostomy, the end results are uniformly better when the gallbladder is removed.

When there is evidence of advanced hepatitis or cholangitis with a marked increase in the intrahepatic tension, it is advisable to institute prolonged drainage of the common duct as a supplement to cholecystectomy. The late John B. Deaver practised this procedure frequently, and Judd, of the Mayo Clinic, has reported excellent results following this method of treatment. Drainage is effected by means of a "T" tube which is accurately sutured in the common duct. It is left in place for several weeks, or longer if necessary. By this means biliary tension is lowered to a minimum, adequate liver function is regained more rapidly, and the convalescence is in reality shortened.

Occasionally at operation one finds a minimum amount of gross pathology in the gallbladder and ducts, no evidence of obstruction, and yet a marked hepatitis. The surgeon, therefore, hesitates to explore or drain the common duct. In such cases cholecystectomy with drainage of the cystic duct for a week or ten days will give excellent results. In this procedure the gallbladder is amputated approximately one-half inch above the cystic duct and a small rubber tube is sutured firmly into the remaining portion of the ampulla. One Penrose cigaret drain is placed beside the tube and both are drawn to the outside through a small stab wound lateral to the incision. A portion of omentum is then interposed between the liver and the adjacent viscera and the abdominal incision is closed in the usual manner.

RESULTS

The end results of gallbladder surgery depend primarily upon the proper selection of cases for operation. The basis upon which this selection is made is the clinical picture presented by the patient. Laboratory findings are of secondary importance, and must necessarily be used only as corroborative evidence. It is well to remember that a patient with a low metabolic rate may show a positive Graham-Cole test that will disappear under medical treatment for the metabolic disorder. Likewise a patient with a clear-cut clinical cholecystitis may be relieved by cholecystectomy, although repeated x-rays have revealed a normally functioning gallbladder.

When pain is a dominant symptom in cholecystitis, removal of the gallbladder will be followed by ex-

cellent results. The same is true when the outstanding feature is dyspepsia, provided the latter is definitely of cholecystic origin. In the other types of digestive disturbance, cholecystectomy is obviously of no benefit.

SOME OBSERVATIONS ON SENILE CATARACT

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Strictly speaking, cataract may be defined as any pathological condition of the lens marked by visible opacities. However, for practical purposes, the term is enlarged to cover certain anomalies of the lens in which there is considerable diminution of vision without the presence of definite opacity. No sharp division between this condition and that in which definite opacities are present, is possible. Cataract was recognized by the ancient Greeks and Romans, but they had an erroneous conception of the disease, in that they supposed the opacity to be upon the lens rather than in it. They believed that it was caused by the pouring out of an opaque fluid between the iris and the lens, and, since it was supposed that this fluid was poured down from above, it attained the name of cataract.

Cataracts, as proposed by Dorr, may be divided into three general divisions: (1) congenital, (2) traumatic, (3) acquired. However, Beard gives us a most useful classification. He groups them according to age, according to consistency, according to color, according to extent, according to the seat and disposition of the opacities, according to the presence of complications, according to the period of development, and, finally, according to cause. In this last group he names the spontaneous, the traumatic, the symptomatic, the albuminuric, the arteriosclerotic, the chemic, thermic, electric, diabetic, tetanic, thyroidal, and uveal. Although cataract is generally considered to be a senile degeneration, almost all pathological states that affect the nutrition of the eyeball may produce it, in that it is generally a secondary disease, and we know that nephritic alterations, diabetes, exposure to great heat, various poisons, arteriosclerosis, ergotism, auto-intoxication, eye strain, injury to the lens or surrounding parts, heredity, and so forth, are regarded as the exciting causes of it.

Much work has been done on the subject of opacities of the crystalline lens, during the past few years. True, most of the advances have been in the surgical field, but doubtless, in the course of time, lenticular cataract will have ceased to be purely a surgical disease. When we have learned the method of production of opacities of the lens, we will be in a position to prevent, render stationary, or even clear, the cataractous opacities, thus transforming a surgical disease into a medical one. The ophthalmologist must receive the fullest cooperation and aid of every branch of medical science, in order to eliminate this, one of the most prevalent of eye diseases.

As to the cause of cataract formation, many ingenious theories are to be found in the recent ophthalmic literature. Much advancement has been made in the method of the removal of opaque lenses, with many variations in the minutiae of the surgical technic. Again, many facts have been brought to light as a result of the studies of the endocrinology, immunology, and the physiological chemistry, not only of the cataractous lens, but the chemistry of the blood stream and ocular fluids, as well. It is these newer observations, both in the surgical methods and medical research, to which I wish to direct your attention.

Chemical and physiological study has shown that the weight of the cataractous lens, as a rule, is much less than the clear lens of the same age. Opaque lenses contain more solids and ash than a normal lens, but some observers found less organic material and a smaller percentage of ash in cataractous lenses. Cahn, Burge, Evans, Kern, Salit, and others, have shown that cataractous lenses contain an excess of lipids, lecithin and cholesterol. Some observers found a definite decrease of potassium salts, averaging from 38.8 per cent of the ash in normal to about 9 per cent in cataractous lenses. Again, a very definite increase in the sodium content of cataractous lenses was also noted. Burge's, Evans', Kern's experiments demonstrated no increase of phosphorous in opaque lens, but the magnesium content was very definitely increased. On the western hemisphere, the ash of cataractous lenses failed to demonstrate any silicon content, but in India the opaque lens contained a large amount of calcium, potassium, and sodium silicate, but failed to show any magnesium increase. Burdon-Cooper observed the presence of tyrosine in a great many cases of cataract, and Coats has found leucin in many others. Met-

tenheimer, Kranz, and others, reported the finding of myelin and myelin-like substances in senile cataracts. Cahn recently has made a very thorough study of the lipid or fat content in opaque lenses and he has shown that there is always a marked increase of lipid, made up especially of cholesterol and lecithin. Further, Jess and Salit have demonstrated the decrease of protein in the cataractous lens. Kirby and Estey, in a recent study, have shown the importance of the H-ion concentration in the metabolism of the lens and have pointed out that a high H-ion concentration is extremely toxic to the lens epithelium.

When we come to the study of the calcium content of the cataractous lens, we come to a factor which probably sheds the newest light on the etiology of cataract. Kirkpatrick, Burge, Adams, and other experimenters, have positively shown that the calcium content of cataractous lenses is increased from an almost negligible quantity, to as high as twenty-five times that of normal. You will recall that, closely related to calcium metabolism, or perhaps controlling it, are the endocrine glands, the thyroid and the parathyroid. Just recently, Edward Jackson pointed out the possible connection between the parathyroid gland dysfunction and cataract. Fisher and Triebenstein concluded that one of the possible causes of cataract formation was due to a parathyroid deficiency, after they found that 88 per cent of cataract cases examined showed a latent tetany, and Greppen also reported that 50 per cent of his cataract cases were associated with parathyroid tetany.

Moreover, partial cures of senile cataracts have been obtained, by several clinicians, following the administration of dessicated thyroid. It is, therefore, possible that the accumulation of calcium in cataractous lenses is a consequence of disturbances in the calcium metabolism. Tetany, as we know, is a state characterized by alkalosis, and calcium tends to be precipitated in the tissue when the H-ion value is shifted from normal toward a great alkalinity. Burdon-Cooper, in discussing the close relationship of surface tension and lower freezing point of urine, suggested a kidney deficiency as the cause of cataract. Greenwald has made the suggestion that there is an interference with renal function after parathyroidectomy, due to decreased calcium concentration of the blood with a decreased excretion of sodium and potassium salts.

In many cases, however, Pellathy found only little change from normal in the serum calcium, but Adams showed that mere increase in the calcium content of blood is not sufficient to cause cataract, nor is it sufficient to hasten maturity of cataractous lens. This is an interesting point, and here in the Southwest, where tuberculosis is treated so extensively, many of the patients receiving intravenous calcium, it is a point to consider well, for some authors are of the opinion that an increased blood calcium hastens the maturity in cataractous lenses. You will recall that ultraviolet rays in some way influence the calcium metabolism. Again, many of the older writers thought that infra-red and ultraviolet rays were the true cause of cataract formation. To my mind, there is a causative factor bound up in the calcium, parathyroid, ultraviolet combination, when it comes to cataract formation and progress.

Burge was able to produce cataract in goldfish by means of ultraviolet irradiations, only if these fish were allowed to remain in an .8 per cent calcium-chloride solution for ten days. Adams' experiment showed that calcium salts acting on ox lens do not cause opacities in physiological strengths, but only in high calcium-salt concentrations. It is also the opinion that the calcium salts do not act as sensitizers in the production of cataract by ultraviolet irradiations. The data of Adams, reported by Kern, on the effect of ultraviolet light on the alpha and beta crystallin of the lens, in which these proteins show a marked sensitiveness to solutions of calcium salts when irradiated, are interesting. Ultraviolet irradiations produce a slight opacity in the lens proteins, which is enhanced by presence of calcium salts, particularly calcium, at the time of exposure.

From the above, it may be seen that these workers are nearly all agreed that there is a demonstrable change in calcium content in the senile cataractous lenses and that lens proteins show a sensitiveness toward calcium salts. Furthermore, the clinical observations of Wesseley led him to conclude that calcium salts, or calcium OH-ion, in some obscure way are associated with cataract.

In the opinion of Romer, toxic substances act as antigens in the production of antibodies and these, in turn, bring about coagulation of the lens protein. It appears from the work of Mashimo, that autooxidizable substances, such as cysteine, are essential for the lens in carrying on its process of respiration. This substance may be the sole agent in the regulation of its gas exchange, because of the remoteness of the lens from the blood vessels, thus preventing the hemoglobin from being the direct source of oxygen. Some processes of oxidation might underlie the

metabolism of the lens and this disturbance might be responsible, at least in part, for cataract formation.

Recently much work has been done on the vitamins in relation to disease processes. Day, Langston, and O'Brien studied the effect of vitamin G deficiency in the production of cataract. You will recall that water-soluble vitamin B consists of at least two factors, the first factor is designated as B and B1, or the antineuritic element. The second factor is called vitamin G, or B2, or the pellagra-preventative element. The above observers, using forty-eight young albino rats, were able to produce bilateral cataracts in 90 per cent of the cases when feeding with a diet deficient in vitamin G, and they concluded from their series that the absence of vitamin G was the sole cause of the cataract.

Turning now to the clinico-medical aspect of senile cataract, we should like to emphasize the role played by diabetes in the production of lenticular opacities. O'Brien carried out a very careful study on a large number of unselected cataracts of various ages and focused his attention on the sugar tolerance of these patients. He found that 53 per cent of the cases showed a maximum arterial-blood-sugar concentration of over 240 after the ingestion of 100 Gm. of glucose. In 73 per cent, there was a sugar concentration of over 220. In 22 per cent of the cases, the sugar level returned to normal only after three hours. In 80 per cent, it failed to return to normal after two hours. Only 21 per cent of the cases showed definite signs of diabetes. In this series of cases, blood analyses for lipids were also studied, and it was found that the cholesterol content exceeded the normal in 50 per cent of the cases, sometimes reaching as high as .2 per cent. Lecithin values were around the upper normal of .3 per cent. Some investigators think that the increased cholesterol is the result of a defense reaction of the body brought about by the metabolic products of diabetic ketosis and thus these toxic substances are responsible for the hypercholesterolemia and cataract formation. Cataracts are of frequent occurrence in diabetics, and this fact led Romer to search for the cause of senile cataract in the blood, where he hoped to find specific toxic substances resulting from faulty metabolism.

Hektoen, Davis, Ellis, and others, worked with a large series of cataract cases, trying to produce visual improvement by the aid of a lens anti-serum. Some of them reported marked improvement in a few cases, but today the consensus of opinion is that the lens anti-serum is of questionable value. One interesting fact was brought out, namely, that the lenses of different species give the same immune reactions. To illustrate the point and quoting Hektoen, a lens anti-serum produced by injecting a rabbit with beef lens, will react in the precipitation, anaphylaxis, and complement-fixation tests, not only with beef lens but also with lenses of other animals.

Summarizing briefly, we wish to point out, first, that senile cataract is not a disease entity but truly a local, surface, and a visible symptom of a general systemic condition. What the systemic causes are, we do not know definitely, but certain findings are suggestive, namely: the relationship between cataract formation and parathyroid and thyroid dysfunction. Closely related to these endocrine functions, we find certain indications that calcium metabolism also plays a part in cataract formation, as evidenced by the great increase of this element in cataractous lenses.

The effect of ultraviolet and heat rays in the production of opacities of the lens, is common knowledge. It is seen in those workers who are exposed to the intense heat and light of different occupations such as steel mills and glass factories. The intense heat and sunlight of India accounts for the great prevalence of cataract there. Knowing the effect of ultraviolet light on the calcium metabolism, we feel that there is a definite relationship between this process and ultraviolet light in the production of certain types of cataract.

We have also seen that deficient vitamin content, especially in the anti-rachitic element, has to do with certain types of cataractous opacities, as was shown experimentally. Furthermore, certain toxic by-products of metabolism, whether related to pancreas malfunction or renal malfunction, are definitely associated with cataract formation.

Today surgery offers the only recourse in the treatment of lenticular cataract. The operations are many and with much variation in the minutiae of technic. The extraction of cataractous lens within its capsule, in contradistinction to the removal of the lens leaving the capsule within the eye, has gained definite headway as the method of choice in certain types of cases. When the intra-capsular method was first proposed, there was a storm of objection to it, and only now is the pendulum beginning to swing back.

From the above review and recapitulation of the newer work on the causative and developmental factors entering into the formation of the opacities in the crystalline lens, it is obvious that the entire med-

ical, scientific, and ophthalmic world are working together in an effort to obtain in ophthalmology the ideal—the preventative and medical treatment of that dreaded affliction, lenticular cataract.

Therefore this paper is read with the hope that it may arouse interest in this vital question, and, at the same time, it is presented as a plea for careful physical examination of every cataract case, whether being prepared for operation or study. The examination should include thorough repeated study of basal metabolic rate, the blood-sugar tolerance, the cholesterol, lipid, and nitrogen content of the blood, and so forth.

True, we are just beginning, but the start has been a good one and the main road today is toward the fullest cooperation of all the medical sciences to solve this ever-increasing problem.

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RESEARCH AND CANCER PROGRESS

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(Read before the Eighteenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Albuquerque, N. M., Dec. 8-10, 1932.)

Individual initiative is the indispensable stimulus of science. As Duclaux said: "It is because science is sure of nothing that it is always advancing." Roger Bacon, who was among the first to insist upon the value of original research as more scientific and much more logical than the arbitrary decisions of societies and associations which presumed to exercise dogmatic authority, declared: "Experimental science has three great prerogatives over other sciences; it verifies conclusions by direct experiment; it discovers truth which they never otherwise would reach; it investigates the course of nature and opens to us a knowledge of the past and of the future." It is not only helpful, but essential, to the medical research worker to know the past of medicine. If I did not know certain chronic characteristics of my profession so well, and understand the historic habit of doctors to disagree, and the tendency of certain groups to become over enthusiastic about their own theories and arbitrarily to arrogate to themselves the authority to approve or condemn without investigation or trial the research efforts of all outside their exclusive circle, I should have been discouraged long ago. But I know that experimental science is not based upon authority, but on impartial, accurate, industrious, and impersonal investigation. I have observed the barren results and the futile efforts of too many of these "authority men" to have implicit confidence in their theories and in their assumptions of authority.

Reading old medical books and the enthusiastic predictions contained in papers presented by recognized medical authorities of former days, has a very sobering effect on one. "The debris of broken systems and exploded dogmas," said Dr. Oliver Wendell Holmes, "form a great mound, a Monte Testaccio of the shards and remnants of old vessels which once held human beliefs. If you take the trouble to climb to the top of it, you will widen your horizon, and in these days of specialized knowledge, your horizon is not likely to be any too wide." Doubtless many of you have been surprised very often, as I have been, by the lack of medical perspective and the narrow viewpoints of specialists and workers in specialized fields of medical research. One of the birth-marks of genius is said to be eccentricity, and one of the distinguishing marks of specialists is their inability to consider a subject in all its aspects or to view it all the way round. The blind men who went to see the elephant and described only the parts with which they came into contact illustrate how far right and how far wrong a specialist may be. Dr. A. B. McCollum, professor emeritus of chemistry of McGill University, coined the word "spelunculist" to designate the type of specialist "who knows more and more about less and less." A number of eminent men who have been studying the costs of medical care for the past five years recommend that "united attempts be made to restore the general practitioner to the central place in medical practice." Medical men of broad experience admit that 80 per cent of the ills that induce patients to consult physicians could be adequately handled by the general practitioner.

Research work is the privilege, the opportunity, and, I may say, the duty of all of us who are trying truly to serve the sick. There is an impractical tendency among some groups of research workers in the medical field to become too complex and too mechanical. They become veritable medical robots and if any screw gets loose in their intricate and complex machinery, they create discordant notes that disturb medical harmony.

Experienced and devoted physicians who are more interested in the patient who has the disease than in the disease the patient has, agree with Sir James Mackenzie that each bedside observation is a problem in original research. When methods of measurement are applied to problems of disease in a particular patient, inescapable difficulties develop, because of the variations between human beings in the many obscure factors that are so often associated with the development of cancer and other maladies.

Scientific procedure requires exact measurement, which is frequently impossible in medicine. Medicine as applied to the particular individual will always be uncertain and experimental no matter how large the laboratories become and no matter how many instruments of precision may be manufactured. The physician is compelled to wrestle with many factors and forces which no one understands and over which he has no more control than he has over the weather, but which greatly influence the improvement or decline of his patient. Too many investigators and research workers disregard the fundamental fact that man cannot be divided and distributed to accommodate the limited vision and practice of various specialists, but must be treated or mistreated as a whole. The true physician and the true research worker must have a comprehensive viewpoint and consider the man as a whole and what the whole of medicine can do for him.

"The research spirit," as Dr. F. O. Tonney of Chicago expressed it, "is spontaneous. It cannot be driven or created by order. It is predicated on the personal interest of the worker himself in the problem for its own sake."

The problem of cancer is the greatest problem that confronts the physician and the greatest menace to the health and happiness of the human family. What type of mind and what kind of an organization do you conceive would oppose any sincere effort to combat cancer and diminish the terrors of this terrible scourge? The subject is of such vital importance that it should be approached by all physicians with open and unbiased minds, and any contribution to progress, however slight it may be, should be welcomed.

If we study the history of medical progress, we find that many of its greatest discoveries owe their origin to the very simple observations of sincere men. The modern science of bacteriology rests upon work done by a country doctor. Another country practitioner studied heart disease among his patients for a great number of years with instruments made by himself. Sir James Mackenzie added more to our knowledge of heart disease and its treatment than came in the same period from the great groups, societies, hospitals, and laboratories of the world. The greatest medical achievement of the nineteenth century—the discovery of anesthesia; the most beneficial medical discovery of the eighteenth century—vaccination; the first great specific in disease to be found and the most valuable contribution of the 17th century—quinine; all of these came from unexpected, humble sources.

The research work and experimentation which has been attempted and is now being done in the cancer field is, of course, too vast a subject to be discussed in many of its detailed phases here tonight, so that I am only mentioning a few phases and those briefly. Very expensive and extensive efforts have been exerted by various cancer societies and committees on rat experimentation, which, unfortunately, have not produced results of benefit to cancer sufferers. When an experiment—even a noble experiment—has the fatal defect that it will not work in practice—is it not the part of sound common sense to abandon it and try something else?

In our laboratories, which some of you have visited and know are as adequately equipped as large modern laboratories anywhere, we have, as set forth in our publications and addresses, competent investigators working with us, and our staff comprises men representing various specialties engaged in scientific research wrok. Medicine, of course, is not an independent science but a very dependent art that utilizes discoveries in all fields of science whenever and wherever they are practically applicable.

The indispensable place and practical value of animal experimentation under carefully controlled conditions, is daily demonstrated in our laboratories. But we never lose sight of the fact that there are immeasurable differences between men and rats and other laboratory animals. There is a distinct difference between the histologic picture of tissue regeneration in animals and that in human beings. This difference emphasizes the fact that the conception of healing in human beings must be built up from

observations on the tissues of human beings.

Dr. Theodore C. Janeway, who taught in three medical schools and in four hospitals, set down this fundamental for every clinical teacher: "He must be a practitioner of his branch of the medical art. If not, no matter how able an investigator he be, he is not a clinician. The subject of his investigations must be the sick human being, and his essential workshop the hospital. Even though he may often resort to more easily controlled experiments on the lower animals for help in the elucidation of his problems, no solution is final until his experiment has succeeded in helping the sick man."

It was to help the sick man and the sick woman—the cancer sufferers to whom medicine offered no hope—that we began our research work some years ago that finally resulted in our discovery of the Coffey-Humber suprarenal cortex extract. During the years that we have been administering our extract to thousands of patients, we have seen patients with different types of malignancies improve in appetite, gain in weight, have sound sleep, abstain from the use of drugs for the relief of pain. We have observed the disappearance of odor. Many physicians who visit the Coffey-Humber Clinics in San Francisco and Los Angeles, are offered the remarkable evidence of hundreds of men and women who have received all known methods of treatment for malignancy, and who have been given up to die by their physicians, living two and three and four, and as high as five, years after the sentence of early death was pronounced by their physicians.

Seeing these impressive facts daily for successive years, and having them recorded in a malignancy register, with cross index and with special index files for particular phases of the work—a malignancy record that is open for the inspection of visiting physicians—yet we do not claim now and we never have claimed that these patients are cured of their malignancies, nor have we claimed that the Coffey-Humber extract is a specific for malignancies.

A week after the Coffey-Humber Clinic was opened in San Francisco, at the Southern Pacific General Hospital, Dr. Humber and myself were requested by the United States Senate to attend a hearing before a subcommittee of the Committee on Commerce of the U. S. Senate of the Seventy-first Congress. We obeyed the summons on March 13, 1930. The testimony given there by ourselves and Dr. Joseph Colt Bloodgood of Johns Hopkins; Dr. James Ewing, Professor of Pathology of Cornell Medical School; Dr. Hugh S. Cummings, Surgeon General Bureau of Public Health; Dr. C. C. Little, Managing Director American Society for the Control of Cancer; is published in a Senate document. A few quotations from that document will answer some questions that are constantly coming up. Dr. C. C. Little, Managing Director of the American Society for the Control of Cancer, testified March 13, 1930, at the Senate Hearing to which I have just referred, as follows: "Before dealing with general points, I should like to digress in order to commend Doctor Coffey for his extreme conservatism in the matter. That is the first essential in any report of progress in cancer. He has stated that his work is neither a cure nor a treatment, but an experiment—Doctor Coffey has given us an excellent example of how a man working on the problem ought to act. He has been very conservative, very careful, very moderate, cautious, and wise in the way he is going at his problem." Dr. Little and his associates in the Cancer Control Society and other cancer groups, however, have failed to follow what Dr. Little called 'my excellent example of how a man working on the problem ought to act,' for you know too well how these very men, regardless of the true statements of the facts which had already been issued by us, circulated over the country the information that we were claiming a cure for cancer. Had these same methods been used at the time Dr. Banning made his important announcement in regard to his discovery of insulin, I am afraid that you gentlemen would not have insulin available for your use today as a therapeutic agent in the treatment of diabetes.

Dr. James Ewing and other thoughtful physicians throughout the country, rightfully condemn any organized opposition which is based upon motives that are not unselfish but that are unscientific. Dr. Ewing said: "It would be a great pity if the organized medical profession, by virtue of its power, should prevent competent investigators from carrying out successfully a research that might be of great value."

I believe that you will all agree with me that we must be vigilant and see to it that research is kept free from the domineering rivalry of groups that invoke intolerance and steadily strive to frustrate, handicap, and misrepresent any outside their charmed circle who pursue independent and original lines of thought. The search for truth must not be restricted and cannot be monopolized by any group. We are interested primarily in helping suffering patients and we are working earnestly in searching out the best means to that end.

When we condense the vast amount of literature on cancer, we find that the etiology of cancer is un-

known. Dr. Dean D. Lewis of Johns Hopkins declared recently before the Iowa State Medical Society: "Carcinoma is one of the most discouraging things I know of. We are going to be defeated until we find the cause and the prevention. Carcinomatous patients are more poorly studied and more poorly treated than any group of patients we have. There are some cases in which incomplete examinations are made, in which there is carcinoma which could be removed in the early stage, but they are lost, because of the carelessness of the examining physician."

The following quotations from a recent article written by Dr. Ellice McDonald, Director Cancer Research Laboratories, University of Pennsylvania Graduate School of Medicine, is also quite significant:

"The story of cancer is not a pleasant subject; it is filled with sorrow, suffering, disaster and defeat, yet it touches the life (and death) of so many of us that it is impossible to ignore it as an uncomfortable idea for contemplation. Scarcely a family but has been struck with the blighting shadow of this scourge. Ignore it as we will, cancer is the most important problem of our time, a greater one than war, pestilence or famine. It kills more people annually, for the total number of deaths each year from cancer are somewhere between 130,000 and 140,000 people in this country. If there are four living cancer patients for each death (and that is a reasonable calculation), it means that there are two-thirds of a million people, at any one time, suffering from cancer in the United States, and, of these, at least (or more than) three-quarters will die within the year of the date of any such calculation.

"Cancer is the most important problem of our time, for two reasons: first, because it kills more people than any other single disease (heart disease, which is higher in the mortality records, is a combination of heart and kidney and other diseases); second, because it has increased so greatly in incidence in recent times—62 per cent more deaths in Pennsylvania in twenty-five years, and in somewhat lesser degree in all civilized communities. In Great Britain, in 1928, more than 12 per cent of all deaths were from cancer, and a great insurance company has estimated the yearly loss from cancer in the United States to be about eight hundred million dollars."

Dr. McDonald also makes the following statement: " . . . in the best clinics and under the best auspices, 75 per cent of cancers are not suitable for surgical treatment because extension of the disease has already occurred."

Coffey-Humber statistics show that the cancer patient, in a large number of cases, shows other pathology and malignancy, which is understandable in view of the fact that the bulk of the cancer patients have arrived at an age where degenerative diseases occur. Furthermore, Dr. A. M. Moody, our pathologist, reports that autopsies performed by him reveal that 63 per cent of the deaths which have occurred were caused by intercurrent diseases independent of cancer.

We still adhere to our original plan of operation —that is, that this work is research work and should be conducted as such at the present stage, without permitting it to be commercialized.

We are convinced, however, that the progress which we have made justifies us in departing from the policy heretofore pursued of accepting only cases which are diagnosed, by physicians sending patients to the clinic, as moribund and hopeless. We are enlarging the scope of our research services, administering to patients in the earlier stages, with the object of more accurately proving the efficacy of the Coffey-Humber extract in the treatment of malignancies and demonstrating its therapeutic value in various stages of the disease.

We have endeavored to proceed conservatively in order to insure thoroughness and have limited the distribution of our extract to research purposes. But, now that the biochemical analysis of the extract has been made, the standardization of the extract is completed, and the proper dosage determined, we are releasing the extract through Better Health Foundation, a non-profit California corporation, to members of the profession qualified by ability and experience to conduct independent research in cooperation with us in administering the extract to those cases who have returned home from our clinic, with the firm belief that research will be furthered and that our findings will be confirmed and corroborated.

It is worthy of notice and very significant and gratifying that, since the first announcement of Coffey-Humber and the explanation of our efforts to demonstrate the probable cause of cancer, investigators in various laboratories have changed their activities and have started a great deal of work on the cortical substance of the suprarenal. We are naturally pleased that our efforts have stimulated this important work throughout the scientific world. We welcome constructive suggestions from any source, but years of experience have taught us not to duplicate the disappointing efforts of other investigators, and to leave to other cancer groups the-

ories and methods and experiments which, over and over, have shown that they give no reasonable promise of results beneficial to sufferers.

Since the first announcement of our work, we have repeatedly stated that we believe the secret of neoplasia, or malignancy, lies to a large degree within the realm of the metabolism of the cell. During the past few months many investigators such as Dr. Carl Voegtlin have elaborated on this belief. We are continuing with our physiological, biological, and bio-chemical studies relating to cell growth, still firm in our belief that cancer is a constitutional disease, due to the lack of a given active principle which maintains the metabolism of the cell in its normal state.

Research, to be worth while, must be like virtue, which is its own reward. Sir Ronald Ross, who should have received any reward that would make his declining years comfortable and happy for the research work, beyond all praise, which he did on malaria, answered in a recent issue of the Saturday Review the question, "Is research worth while?" The answer of Dr. Ross is that, for the human race, nothing is more worth while than successful investigation, but, for the research worker, nothing is less worth while. Many discoveries have been made to the benefit of millions without the makers having received the smallest reward of recognition. "Medical discoveries," Sir Ronald Ross says, "are the most glaring examples, because of the silly custom that physicians are not supposed to make a profit from inventions." As to subsidized investigations, Sir Ronald holds that they seldom lead to important discoveries and that much money is now being wasted on futile researches. Sir Ronald therefore advocates payment for results. Nearly all great advances, as I have pointed out, were unexpected, and came from independent humble workers.

As a great scientist truly says of himself and all scientists: "We are just kindergarten fellows playing with mysteries. We move from one theory to the next and always there is something that does not fit with other evidence."

All of us who are working in the medical field realize that we are practising an inexact science and an empirical art. Each day problems come to us that baffle our best brains and our most devoted efforts, so that we should sincerely repeat what Dickens wrote in David Copperfield: "Humble are we, humble we have been, humble we shall ever be. For surest and best adorned is he whose clothing is humility."

A BIOLOGICAL EXPLANATION OF CANCER: ETIOLOGY, PREVENTION AND TREATMENT.

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Denver, Colo.

(Read before the Eigtheenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Albuquerque, N. M., Dec. 8-10, 1932.)

It would appear that the determination of the cause of cancer is not to be obtained or expected by continuing in the present lines of investigation in the laboratory, but that we must turn to the clinical field and to the study of the biological and metabolical phases of the living patient, where many of the important discoveries have been made. The living patient is really the greatest laboratory with which we are concerned, though it is rather difficult for us to discern and evaluate the evidence found there. It is unfortunate that the laboratory worker has in the past somewhat isolated himself from the living patient, and it is equally unfortunate that the clinician is unable to understand fully what the laboratory has to teach, for this problem is one that certainly overlaps both fields of endeavor.

That the cause of cancer may lie in the biology of the individual is a relatively new idea. Dercum (1924, Biology of Internal Secretions, page 158) says: "Can it be that, after all, the cause of malignancy is biological, and that the mystery lies in the internal gland secretions? If so, this abundantly explains the failures of the search for special cancer causes." On page 158 he says, "Sajous has long maintained that adrenalin has an action opposed to malignancy, and I believe the facts necessitate our attributing such an action to the entire sympathetic group."

Let us point out that it is common knowledge that benign growths may advance into malignancies by apparently simply sliding a short way down the scale of cell activity, and that the line drawn between non-malignancy and malignancy is extremely shadowy.

In considering the field of present-day treatment of cancer, we are less disappointed. Some progress has been made in the earlier recognition and earlier surgical measures applied, or treatment in the form of radiation, or both, and in the educational measures adopted for the layman. But to date reasonable

success has been attained in about 30 per cent; not sufficient to raise our hopes for success in this direction. It is somewhat of a travesty on the educational program that, according to a statement recently made, cancer in doctors is recognized later than in lay people.

In order to explain the reason for my present views and remarks, I must go back twenty-five years to the beginning of my surgical life. At that time certain phases of renal surgery had fallen into more or less disrepute, yet today many men are still living in that period, with their same prejudices, and still believe, or think they do, that no operation for this purpose can be successful. At that time, Edebohl's nephropexy operation and all its many modifications had proved unsuccessful in so large a percentage of cases that it was given up and condemned, as it should have been. This condemnation equally applies to the recent publication in this country of Dr. Kidd's nephropexy, as this operation has all the objections and faults of Edebohl's with several more of its own added. All of these do damage to the adrenal glands and colon, and the patient is often left in worse condition as to systemic symptoms, than before operation.

The author succeeded in devising an easy and efficient method of nephropexy. It has now been used for more than twenty years, with results so good that it did not seem possible that these results could come from simply fixating a loose kidney and freeing its ureter. I have now done this particular operation more than eleven hundred times.

It was a year ago that my attention was called to the possibility that I might be doing something beneficial to the adrenal gland, while I was correcting the nephroptosis. Therefore, I began a study of the anatomy of this region, and found that there is a certain phase of pathological anatomy in the condition known as general visceroptosis, that had never been recognized or described. We thought we knew all that was to be known in visceroptosis, but here was something that had escaped notice even though volumes have been written on this subject. This finding was that the adrenal glands are distinctly damaged by sharing in the ptosis of the kidney, which is nearly always a part of general visceroptosis. The damage is the result of the pull upon the adrenal gland itself, and especially upon the three arteries of the gland—the superior, the middle, and the inferior, which rise from the inferior phrenic, the aorta, and the renal artery, respectively. There is also a pull upon the sympathetic nerves of the gland, which produces trouble from that source.

This whole process produces a hypoplasia or atrophy of the gland, by a lessened blood supply, and an upset in its function, by the nerve irritation. A distortion of the gland is also produced, even to turning it upside down. This mal-function then seriously affects the whole internal glandular system, for the adrenal glands seem to be virtually in control of a number of the vital life processes in conjunction with the function of the whole internal glandular system—in control of the cardiac, vascular, muscle and nerve tonus, as well as the vital physiology and metabolism, even to the biochemistry of the final unit of tissue division, the cell.

The metabolic cell chemistry is further affected by improper physiological habits of the individual, such as overeating, constipation, chronic nephritis, dehydration, and under-elimination of the normal waste products. I have much clinical proof that this combination of anatomical and physiological pathology seriously affects the health and even affects the structures of the various tissues of the body.

The functions of the adrenal glands are gradually being learned. The medulla produces adrenalin whose properties are well known to all. The cortex appears to me to be a synergistic gland with the medulla, whose secretion, cortin, apparently has the same properties as adrenalin, except that its effects are more lasting: the medulla might supply the push for a hundred-yard sprint, but the cortin is called upon to sustain one in a marathon race; long-continued muscular effort can be put forth only as long as the cortin is supplied. A single dose of cortin will suffice for a week or more, in a case of Addison's disease.

In addition to this phase, the cortex has further functions, as is shown by the fact that animals which have been adrenalectomized die promptly unless artificial cortin is supplied. It is my suggestion that it is necessary for the physiological and biochemical life of every cell in the body. It has been called "the brain of the autonomic system"; I would go further and say it is the brain of the entire vegetative and somatic systems.

GENERAL CONSIDERATION

It occurred to me that, if we could determine what forces control the orderly development of the cell tissues and structural growth of the fetus, we should then have a hint as to what is lacking when disorderly growth—cancer—occurs. It is my effort to show what possible influences affect such growth, from the moment of ovum fertilization, through

fetal tissue differentiation and specialization, through developmental growth from child to adult life, and the process of orderly cell repair that must continue, unceasingly, until death ends the necessity.

It would appear that, if a certain substance or force were necessarily present to produce a certain positive result, its lack or absence would be a necessary condition for the negative to be evidenced.

It is quite unlikely that this power of replacement control, for life, lies inherent in the sperm and ovum, This would mean that it had always been there since time began and would remain for all time to come, and that it is wholly uninfluenced by each succeeding individual. It is more rational to assume, rather, that this ability of control is subject to the influence of the functions of our secretory systems, and to the actions and reactions of our metabolic and physiologic processes.

We suggest that physiologic and metabolic normal health will prevent the development of cancer, just as good health will preclude the appearance of numerous other diseases. For the same reasons, ill health invites numerous illnesses. We believe that good gland function and good general metabolism induce good health, and that poor glandular function and poor cell metabolism will produce poor health and disturbed cell—chemistry balance—that even cancer may result. The cachexia today of an established malignancy, is often only an augmented form of the cachexia the patient has carried for years, and which may have been erroneously considered his normal complexion; therefore, the cachexia was from the causes that produced the cancer and not from the concer.

For these reasons, we feel that it is possible fairly accurately to prognosticate cancer in certain individuals as I have done, just as we can foresee probable tuberculosis, Bright's disease, or other diseases. We should become so skilled in our observation that we may almost look into a patient and see what sort of cell chemistry he is carrying on.

Apparently, good health is more dependent upon normally placed, normally nourished, and normally functioning adrenal glands than upon any other one organ or structure.

Tissues are replaced regularly and all injuries are healed, or should be, and the healing process is stopped normally at the proper time; if not, then a keloid occurs. It is well known that a relatively small amount of hyperglycemia may prevent or delay healing of a wound. It is also known that certain hormonal unbalance may prevent union of fractures. Certain irritating substances may produce exuberant granulations, which are not markedly unlike malignant new cell growth. Fetal cell rests occur, and are held under control during fetal life and until middle age, or even into old age; then something happens, as we approach the cancer age, which negatives this control and permits these rests to grow and produce certain types of tumor or cancer.

There is probably ony a slight difference between orderly and disorderly cell replacement, and it appears almost axiomatic that this difference arises from unbalanced hormones or improper metabolism and cell chemistry, which, if once established, work in a vicious circle.

It is probably impossible for any of the internal glands long to continue in hyperfunction, else exhaustion occurs. It is quite likely that what appears as hyperfunction is, in reality, a hypofunction of an antagonistic gland. Many men believe that hyperfunction of the adrenal glands will produce a goiter with hyperthyroidism, but the author has definitely proved that hyperthyroidism is due to hypo-adrenalism, long continued.

Cancer is a disease of advancing age and, therefore, must be due to the general physiological changes regularly associated with this period of life.

It sometimes appears that cancer may run in families; and the opposite is equally true, that it is absent in other families. In commenting upon this, we would say that a certain type of constitution is a marked characteristic of a family. It is my suggestion here that it is quite possible, or even probable, that there is a cancer constitution, and that we may be born with a definite probability of having cancer. Warthin and Simpson make a similar observation, "that a person is born to have a goiter." This is "the thymico-lymphatic constitution" which they describe. It is also my observation that this same type tends to develop cancer, plus certain improper physiological habits that increase the liability of these persons to develop cancer. I think none will dispute me when I say that there is a certain relation between the type of body and the internal glandular system, which is evidenced at birth.

Without question, certain of our presently accepted etiological factors are true in fact, such as chronic localized infections, chemical or physical irritations, cell rests and trauma; I believe that these are simply areas of lower resistance that develop first when the constitutional physiology reaches a cancer-development stage.

It is a well-known fact that a woman suffering

with Addison's disease is unable to carry a child to term. This is a most direct proof that adrenal function of mother and child is the directing force that is necessary for orderly development of the fetus. Such a woman may bear a child, if treated with cortin. This further bears evidence that pigmentation in pregnancy is due to adrenal insufficiency.

The percentage of malignancies is much higher in women than in men, therefore it is reasonable to assume that there is some etiology that is peculiarly present in women. In addition to pelvic and breast infections and trauma, women are subject to a higher percentage of goiter, of visceroptosis, of chronic nephritis, of constipation, of dehydration from low fluid intake and from purging, of auto-toxemias, and of poorer general metabolism.

When biochemistry succeeds in giving us the exact chemistry of the cell and an accurate measurement of hormones, we will probably then be able to prove the physiological phenomena that are now evident to us in malignancy.

FACTS I HAVE LEARNED ABOUT ADRENALS AND KIDNEYS IN MY OWN WORK.

1. In the new-born and in normal children and young adults, the adrenals and the kidneys are tucked up close to, and supported by, the diaphragm and the perirenal capsule. When ptosis occurs to the kidneys and adrenals, their displacement occurs entirely within this capsule and is not influenced by the liver or any other adjacent organ.

2. In the new-born, the adrenal tissues are quite fragile and succulent, while in the elderly adult the adrenal is tough and fibrous, much decreased in size, and is usually flattened out by being stretched by the vertical pull of the kidneys.

3. In the elderly adult, the adrenals might be described as about the size of various coins—a quarter, fifty-cent piece, or a dollar—that had been run over and twisted into various shapes.

4. I have found a normal gland in a sixteen-year-old husky youth, and a near-normal in a woman of thirty-six; these are the only ones found in adults.

5. The ptosis of the adrenal gland is always approximately one-half the ptosis of the kidney, and the greater the ptosis,, the greater the deformity of the gland. Usually it is a flattened inverted Y, but in ptosis the Y may take any position, or one arm may be short or almost absent.

6. The vessels and nerves are stretched to the new position of the gland. If this ptosis were sudden, from trauma, these vessels might be torn and produce a perirenal hemorrhage.

7. The individual's complexion is dependent upon the adrenal function, and this is dependent upon the degree of ptosis and damage therefrom. The schoolgirl complexion can come only from adrenal glands of good function, and can be found only in people without injurious visceroptosis.

8. There is evidence of low adrenal function in the sallow, slender, anemic child of early age. The anemia appears to be due to the retention of urinary waste products.

9. Low blood pressure is regularly found in hypo-cortinism, unless the accompanying renal disease offsets it and further produces a hypertension. The picture will be determined by that which is more diseased, but symptoms of both may be present.

10. The adrenal function may be so low in non-tuberculous glands, that in fact it will simulate true Addison's disease, and it is due to the same cause, hypo-cortinism.

11. All pigmentation, of whatever degree, is due to lowered function of the adrenal cortex. This includes all cases, from sallow skin to pigmentations of hyperthyroidism, pregnancy, "chloasma uterinum," and true Addison's disease.

12. The condition known as "nervous prostration" is due to neuro-myo-circulatory asthenia, from exhausted adrenal glands.

13. All cases of hypo-cortinism are more subject to all types of infections. This has been stressed by Dr. Richard Whitehead of Colorado. Vincent states: "The removal of a large part of the adrenal tissues renders the animal more susceptible to infections."

14. I have done a double adreno-nephropexy to numerous visceroptotic thymico-lymphatic children, and have observed that they undergo a very considerable recovery from their unstable constitution, to a much more normal appearance and physical and mental activity. This also appears to give certain evidence that the adrenal function has much to do toward producing a normal constitution in the growing child. I have operated upon children as young as three years and adults as old as 77 years.

15. It is most surprising to what extent the adrenal function will recover in patients of all ages, after this operation. All types of asthenias are immediately improved; pigmentations clear rapidly, even before the patients leave the hospital. Either hypertension or hypotension does equally well, for both lesions are corrected. There is a similar improvement in the entire internal glandular system. This is true, also, with the general metabolic processes, and goiter and hyperthyroidism are permanently relieved.

TREATMENT

Treatment, according to present ideas, naturally divides itself into two phases: preventive measures, and active measures.

(1) Preventive Measures. Accepting the basis that, in an individual approaching cancer age, the better or more perfect his physiological and metabolic biochemical processes may be, the less probability there is that he will develop malignancy; then, this would mean that, throughout his entire life, every advisable factor leading to this happy condition should have been done at the necessary moment to secure the most lasting and permanent relief to the various vital glands and organs, from a biochemical viewpoint. If these measures have not been followed, then he must be carefully studied for numerous conditions that tend to affect one's general and continuing health. These are: blood constituents, general vitality, color and texture of the skin, brightness of eyes, edema of shins, appearance of the tongue, constipation, hydration or dehydration, appetite, sleep, blood pressure, heart rate and tone, internal glandular activity and any evidence of hormonal unbalance, localized infections, chemical or physical irritations, new growths, any type of hemorrhage, character of stools, headaches, migraine or visual disturbances, chronic uremia with or without chronic nephritis, undue ptosis of abdominal organs or kidneys or adrenals, urinary tract infections, recurring pains of any type, total fluid intake and urinary output; in fact, every possible thing that can affect the general metabolism of the body. These should all be corrected by whatever method necessary, and surgery should be used liberally when necessary or if it offers better prospects of a normally functioning entity. Especial emphasis should be placed on gallstones, chronic appendix, digestive disturbances, tumors of breasts or moles on skin, pelvis tumors, perineal lacerations, prolapse, bladder irritations, blood chemistry, renal prolapse, renal infections, and renal function, adrenal ptosis, adrenal function, goiter, and metabolic rate.

This is a health examination what is; and it is physiological surgery for the sake of obtaining and insuring permanent health, and not simply to remove an offending organ. This should insure a perfect, or near perfect, functioning organism, and should be our greatest guarantee of avoiding malignancy.

(2) Treatment in Established Malignancies. In addition to all the known best measures we are using today, one should attempt to establish good physiology, especially renal function and bowel elimination without cathartics, which are always damaging. If the patient is apt to live a reasonable length of time, then renal and adrenal ptosis should be looked for. If found, I have advised, and would advise, operations for the cure of ptosis. These operations are without danger or shock, and may give much benefit.

Various glandular products may be used. I have used them, as have numerous other men, but I do not feel that I have had enough experience or proof of their value to express an opinion at this time.

I am, therefore, as you can readily see, advising numerous measures for the enhancement of the individual's general health, at a period when one needs the aid of every possible factor, to give him such a body that he may carry on his activities with pleasure to himself and honor to his medical adviser.

I have not attempted to give final answer to any of the questions I have brought up in regard to this baffling disease; but I do wish to call your attention to the fact that I have here suggested the method of an intelligent approach to perhaps the most important internal gland, with a definite foreknowledge that its functions can and will be benefited, and, through it, the other glands will share this benefit, as will the general metabolism of the entire body.

We believe that we have opened up an entirely new field for experimental study that has possibilities of great reward to the best minds that may enter the race.

RADIUM TREATMENT OF CARCINOMA OF THE PROSTATE AND BLADDER

DAVID M. DAVIS, M. D.
Phoenix, Arizona

(Read before the Eighteenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Albuquerque, N. M., Dec. 8-10, 1932.)

The surgical treatment of carcinoma of the prostate and bladder is not satisfactory. The only operation giving any hope of cure in carcinoma of the prostate must be the complete excision of the growth. Young's radical operation aims to do this, but is successful only in very early and circumscribed growths, which constitute a practically negligible proportion of the cases seen. Complete excision of the prostate and bladder, with implantation of the ureters in the rectum, has been attempted in a small number of cases, and has recently been advocated again by Coffey of Portland. The mutilation re-

sulting from this operation and the many dangers connected with it have prevented its general adoption, and we can, therefore, say little about its efficacy.

In speaking of carcinoma of the bladder, I refer only to those growths which have already infiltrated the bladder wall, and can not, therefore, be treated satisfactorily by intravesical methods. Excision is the only surgical recourse, and often requires the transplantation of the ureter. The operative mortality is around 20 per cent, and the end results are not good. Complete cystectomy has also been suggested, but has the same disadvantages as in the case of carcinoma of the prostate.

The application of radium to these growths was begun as early as 1913 in France, by Pasteau, Schuller, and DeGrais. The history of the development of methods of radium treatment is a long and interesting story, but time prevents my touching on it here.

At the present time, two schools of radium therapy occupy the foreground of interest. In this country the most extensive and thorough work has been done by the group of investigators at the Memorial Hospital in New York. It has become more and more evident with the passage of time that it is impossible, by surface radiation with either radium or x-ray, to apply an adequate dose to any tumor extending very far beneath the surface or lying in any of the internal organs of the body. Radium was therefore placed in the tumor itself, either by means of needles containing the element, or by means of small capsules containing radium emanation. This procedure has become known as interstitial radiation. The small capsules of radium emanation are very convenient. At first they were made of glass, but the necrotizing effects of the alpha and beta rays caused so much trouble that they were later made of gold or platinum to filter the rays. At present the emanation capsules used at the Memorial Hospital are of gold with a wall thickness of 0.3 millimeter. Platinum capsules with a wall thickness of 0.3 millimeter are also extensively used. Quimby and her collaborators have studied in the most thorough fashion the question of dosage. There is, unfortunately, no standard unit of dosage in the case of radium. Quimby has adopted the threshold erythema dose as a unit. This is the quantity of radiation which will cause reddening of the skin in 80 per cent of the cases, and no reaction in the other 20 per cent. In Chicago a unit dose of about one and a half times as much is used. Using the New York unit, it has been found that the lethal dose fot different kinds of cancer varies from 2.5 threshold erythema doses to 20 such doses, and that this dose must be delivered to every part of the tumor-bearing area. A zone surrounding the palpable growth must be radiated with equal intensity in order to reach cancer tissue which has grown out in the form of fine strands or nests from the original growth. With these figures at hand, it is not difficult to calculate that it is impossible to deliver a lethal dose to tumors lying as deeply as those in the prostate and bladder by means of x-ray or external radium pack. Since tumors of the prostate and bladder have been found to require from 10 to 20 threshold erythema doses to destroy them, it is difficult to apply more than about 10 or 15 per cent of the necessary dose by means of external radiation in any form.

Interstitial radiation of carcinoma of the prostate is made difficult by the location and shape of the gland, and by the fact that the usual extension is in the direction of the seminal vesicles, which produces an irregular bicornate tumor. Even with the prostate exposed by perineal incision or by suprapubic cystotomy, x-ray studies have shown the impossibility of producing an absolutely symmetrical placement of the emanation capsules. Proper irradiation of the posterior surface of the prostate and seminal vesicles is handicapped by the danger of causing radium injury to the rectum. In spite of this, it has been possible to give very satisfactory relief in many cases by the implantation done in this unsatisfactory fashion. Recently Ferguson of New York has devised a perforated plate which, used from within the bladder areas, enables one to obtain a very close approach to a symmetrical placement of the capsules within the prostate. Good clinical results have been observed following this method.

Except for the very smallest tumors, the bladder should always be opened for the radium treatment of carcinoma of the bladder. The projecting portion is usually removed. The best method for this is the radio knife or loop. The infiltrating portion of the growth is then carefully implanted with emanation capsules so arranged that they are never more than one centimeter apart and cover a zone at least one centimeter wide outside the palpable growth. The latest tendency is to implant a rather excessive number of capsules to make sure that every portion of the growth receives a generous amount of radiation, about 20 threshold erythema doses. For example, if a flat circular tumor 2 cm. in diameter is implanted with 2 mc. capsules 1 cm. apart, 19 capsules are required and every point in the tumor will receive from 24 to 31 threshold erythema doses. If this is

accomplished, one has done everything possible and it will probably be unnecessary to repeat the treatment at any time.

The other method of employing radium originated with Regaud in Paris, and with it are associated the names of Cade, Evans, and Keynes in England, and C. L. Martin in this country. These workers believe that multiple foci of small amounts of highly filtered radium element give superior results. The element is preferred to the emanation because the amount of energy given off by it does not change during the period of treatment. One is thus able to secure the same amount of radiation in the same length of time with a much smaller initial dose in millicuries than with emanation, as the energy given off from the emanation capsule progressively diminishes, reaching about half the original amount in six days. The radium element is distributed uniformly along the interior of a needle having a wall thickness of 0.5 millimeter of platinum, to the amount of one milligram of radium element to each 1.6 centimeters of length of the needle. Needles of various lengths are prepared to be used according to the situation. Each needle has an eye through which a thread is passed so that it can be withdrawn when the period of treatment is over. The needles are usually left in place for seven or eight days. While these needles were at first designed for interstitial radiation, those who have used them most now find that the best results are obtained by cutting off the cancerous area in every direction from the rest of the body by a complete barrage of needles, which must nowhere be more than 1.5 centimeters apart. It is claimed that, with this arrangement, there is practically no demonstrable acute reaction in the tissues surrounding the needle, and that the tumor, after proper treatment, melts away without ever becoming ulcerated. The needles have even been placed in the roof of the mouth, directly against the hard palate, without causing any reaction or change in the bone.

Cutler of Chicago has modified this method. He uses needles similar to the ones described above, but filled with radium emanation to the amount of one millicurie for each centimeter of length. These needles are placed one centimeter apart, and the filtration again is equivalent to 0.5 millimeter of platinum. While he sacrifices the non-decaying source of radiant energy, he has been able to obtain some results which compare very well with those obtained with the radium element needles.

There can be no question that there is more reaction with the 0.3 millimeter gold capsules than there is with the 0.5 millimeter needles. On the other hand, the reactions occurring with the gold capsules vary according to the amount of emanation they contain, and if that amount is not over 2.5 mc. each, the reactions are slight enough so that they have been used freely and successfully in tumors in all parts of the body. Most of the successful work in this country has been done with them.

In treating carcinoma of the prostate with radium, one is often handicapped by the fact that the carcinoma has produced a severe urinary obstruction. If the radium is applied through a suprapubic opening, a suprapubic drain will lead off the urine until such time as the hoped-for shrinkage of the prostate and restoration of urination occur. If the radium is inserted perineally, the same thing may be accomplished by means of a retention catheter. If obstruction persists in spite of treatment, urination can be restored by removing a portion of the growth surrounding the urethra, by means of a punch instrument or a prostatic resector. This latter instrument makes it possible to assure voiding in all cases except those where the obstruction is due to carcinomatous involvement of the membranous urethra. This form of obstruction is, fortunately, rare, as it usually necessitates permanent suprapubic drainage.

My own work with radium began with the surface applications of radium element in the bladder, urethra, and rectum, according to the method of Young. A number of excellent symptomatic results were obtained by this method, but modern developments have shown clearly that the parts of the tumors farthest from the surface do not receive nearly enough radiation by this method. In addition, the concentration of 100 mc. radium in one capsule causes marked reaction even though the filtration is 2 mm. platinum. For eight years, therefore, I have employed the gold and platinum emanation capsules. In general terms, the results have shown a very definite improvement as the dose has been increased from year to year, as more knowledge was forthcoming. The good results in the earlier cases occurred in those where the area to be radiated was small. An example of this is a case treated in January, 1928, by means of four gold emanation capsules containing 2.5 millicuries each, a total of 10 millicuries. In this case the tumor was very large, but the pedicle, while infiltrated, was only about 1 centimeter in diameter. The patient has remained well since, a period of nearly five years. In another case the pedicle was about 2 centimeters broad and also infiltrated. This case, treated in 1926, received fourteen glass capsules containing 0.5 millicurie

each, a total of 7 millicuries, and remained well for one and three-quarters years, after which the patient was lost sight of. The tendency has always been to treat small tumors with perhaps more radium than was necessary, but only lately have we begun to realize the large quantities necessary for the larger growths. I recently treated a rather large infiltrated base in the bladder with 30 millicuries divided into twelve platinum capsules, and feel that this dose is scarcely sufficient. It should be noted here that the most careful cystoscopic examination is necessary before operation, in order to estimate accurately the amount of radium needed.

In regard to carcinoma of the prostate, my records show a case treated in 1925 with six platinum capsules of 2.5 millicuries each, and another in 1926 with ten glass capsules of 0.75 millicurie each. At the present time such doses seem woefully inadequate. The last two cases treated have received, respectively, 30 millicuries and 46 millicuries. The earliest case in which I administered 30 millicuries was treated nineteen months ago, at which time there were present great difficulty and pain, and a frequency of six to seven times at night, and about every one and a half hours during the day. The patient now voids two or three times a day and gets up once or not at all at night. The pain has entirely disappeared, and there is only the slightest hesitancy. The prostate is diminished in size and, while moderately irregular, is elastic, and, I believe, would not be suspected of carcinoma if the history were not known. On the other hand, metastasis has recently been demonstrated in the bones of the pelvis, so that the patient will ultimately succumb to this disease. In the meantime, he feels perfectly well and works very hard every day. The value of such a result to the patient can not be overestimated, even when there is no hope of cure. The progress already made, however, is so great that we may confidently look forward to a not-far-distant time when we may expect to obtain a reasonable proportion of cures in carcinoma of the prostate and bladder as surely as we now expect cures in the radium treatment of carcinoma of the breast and uterus.

There is definite evidence that, in some cases at least, surgical procedures carried out on carcinomatous prostates hasten the growth of the tumor. I recall three cases which suggest this very strongly. In one of them, a conservative perineal prostatectomy was done on a large prostate which proved to be entirely carcinomatous. About a month later, a dose of radium, which we now know to have been inadequate, was inserted. The prostate remained stationary for about three or four months, and then increased rapidly in size. In the second case, it was impossible to use radium for financial reasons. The patient had a moderately large prostate and complete retention. The retention was relieved about six and a half months ago by a prostatic resection. While the patient has been able to void comfortably since that time, the prostate has shown a rapid increase in size. The third case was treated in similar fashion seven months ago. He was able to void for a time, but then had complete retention again. Examination showed that the prostate had increased markedly in size, and that the obstruction was due to a carcinomatous stricture of the membranous urethra. Since dilatation produced little or no improvement, suprapubic cystostomy became necessary.

While we all look forward to the future with hope, yet as physicians we are more interested in knowing what can be accomplished at the present time with the means available. In carcinoma of the prostate we are not justified as yet in hoping for cure, but we can be almost certain that, if the growth is not in the most extremely advanced stage, it can be arrested and normal urination restored and maintained for a long time in a great majority of cases. In infiltrating carcinoma of the bladder, the records of Memorial Hospital now show about 25 per cent of the patients well from three to five years after radium treatment, and we must remember that even three years ago radium treatment was applied in a far less effective manner than today. We no longer need fear the reactions which proved so distressing when large amounts of unfiltered or insufficiently filtered radium was applied more or less at random. While such results are not satisfactory to those enthusiastic over the future of radium, they are certainly good enough to demand the attention of every physician. As compared with surgical procedures, the application of radium is very safe, with practically no primary mortality, and the end results in the two fields that I have discussed are already superior to any that have been attained by surgery.

ANNOUNCEMENT

Drs. W. B. Coffey and J. D. Humber announce the removal of the Coffey-Humber Malignancy Clinic from the Southern Pacific General Hospital with the establishment of Diagnostic Clinics at 909 Hyde Street, corner Bush Street, San Francisco, California, M. G. MacNevin, M. D., Director, and 1303 South Gramercy Place, corner Pico Boulevard, Los Angeles, California, R. W. Starr, M. D., Directors. Physicians are cordially invited to visit these clinics.

PSORIASIS RUPIOIDES WITH CARCINOMA

E. W. JOHNS, M. D.
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(Read before the Eighteenth Annual Meeting of the Medical and Surgical Association of the Southwest, held at Albuquerque, N. M., Dec. 8-10, 1932.)

Psoriasis rupioides is a sufficiently rare condition to warrant the presentation of such a case report, and when, in addition, it is complicated by an epithelioma, a detailed study of the case, together with somewhat of a review of the literature, is worth while.

Our patient was referred to the Lovelace Clinic by Dr. K. A. Herbst, of Springerville, Arizona, for the removal of a large epithelioma of the foot, which had been the cause of several severe hemorrhages. Not the least interesting part of the case was the underlying condition which finally had resulted in an epithelioma—psoriasis of the rare rupioid type.

CASE REPORT

The patient, E. B., entered St. Joseph's Hospital on November 29, 1931. He was a white male, 40 years of age, unmarried, by occupation a farmer, but he had been unable to work for the past fifteen years. His father, two brothers, and two sisters, were living and well. His mother died from cerebral hemorrhage and one brother died in infancy. One brother had urticaria as a child. No history could be elicited of the occurrence of cancer, psoriasis, eczema, or other skin trouble, amongst any blood relatives.

Past Health. Outside of his present trouble, the patient had had no illnesses except the ordinary childhood diseases and minor illnesses. He had had no serious accidents. He stated that he had always been unable to eat eggs or honey without vomiting, so had religiously abstained from them for long periods, without affecting his condition. He had no other known food or other sensitization.

Present Condition. This began when six years of age, and there was a gradual increase in the condition, until he has been unable to work for the last fifteen years. There was originally no deformity of the fingers, this having gradually developed during the last seventeen or eighteen years. At first, the lesions were superficial and, as described by the patient, could well be the ordinary psoriasis lesions. Gradually, they became more and more thickened and deforming. The nails were early involved. He early discovered that he could remove the heavy crusts with any grease by getting them well soaked and then peeling off the loosened crusts, but they always soon recurred. They could be removed by various salves used by physicians, but he ascribed the good effect to the grease base of the salves. No prolonged course of internal medication, such as arsenic in the form of Fowler's, had apparently ever been taken. Three years ago, he first noted an ulcer on the outside of his right heel. This changed but little, except for a slight increase in size, until about five months ago, when he first noticed beginning tumor formation. Growth of this tumor has been very rapid since then. November 10, it was removed by Dr. Herbst by cautery, but regrowth was extremely rapid. Several severe hemorrhages occurred, which were controlled with great difficulty and which were the patient's chief concern and complaint. He had noticed an abnormal condition of the tongue for ten years, which interfered somewhat with swallowing.

Physical Examination. This showed a fairly well-developed and well-nourished white male of about forty years, who was fairly intelligent and cooperative. He was slightly pale, but dark complexion prevented this being very noticeable. His hair was close cropped, with no scalp lesions. Pupils reacted well to light and accommodation. Nose and ears were normal. Teeth were very good. Tonsils were quite normal. The dorsal surface of the tongue was much thickened and deeply furrowed. Thyroid was not enlarged. Heart and lungs were normal. Abdomen was not tender and no masses could be palpated. Liver was not enlarged. Spleen was not palpable. Inguinal rings normal. Normal external genitals. No enlargement could be demonstrated of the cervical, axillary, inguinal, or popliteal lymph glands. Knee-jerks were normal. The outstanding thing about the patient was the condition of his hands and feet. The skin of both hands and both feet, and the bony prominences of the sacrum and buttocks, were covered with dry, elevated, confluent, crusted, scaly lesions, which were of a yellowish color. The arrangement of the lesions was symmetrical to a striking degree. These were quite readily peeled off, exposing the skin, which looked fairly normal except that it was a little redder than normal. True bleeding points could not be demonstrated, but the skin beneath these crusts was very thin and very easily traumatized. The palms and soles and the whole of the fingers and toes were almost a solid mass of crusts, as were also the sides of both hands and feet. The backs of the hands had only small islands on each knuckle and a good-sized area over the ulnar prominences at the wrists. The finger nails were involved, being thickened, rough, and scaly. The fingers were deformed and stiff, with movement to any extent of only the thumb of the left hand and the thumb and forefinger of the right hand. The elbows were dry and scaly but were without crusts. The upper surfaces of the feet were pretty well covered but with small islands of apparently normal skin. The involved area extended for about four inches above the ankles. The knees were not involved. On the back, the bony prominences of the ilia, sacrum, and

ischia had small islands of involved skin. The rest of the skin of the body appeared normal. No lesions of ordinary psoriasis could be found. On the lateral aspect of the right foot below the ankle, there was a large tumor mass measuring about four inches in diameter and two inches in depth. It was a raw fungoid, dark-red, ulcerated mass of malignant-appearing tissue, very vascular and moist with serum and pus.

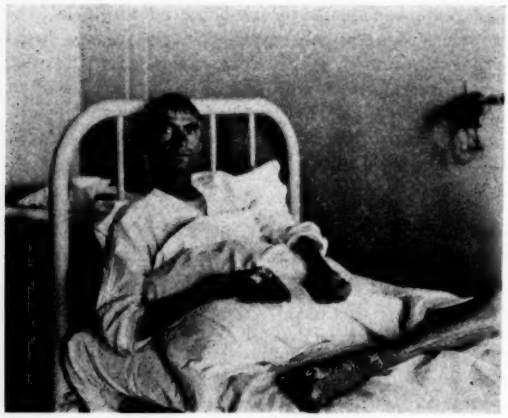

Fig. 1

Fig. 2

Laboratory examinations were as follows: Blood Wassermann, negative. Hemoglobin (Newcomer method) 38 per cent; red cells per cmm. 2,270,000; white cells per cmm. 18,100; 87 per cent polymorphonuclears; 9 per cent small lymphocytes; 1 per cent large lymphocytes; 3 per cent transitionals; no eosinophiles. Urine was entirely negative except for an occasional granular cast. Scales from the back of the hand were examined for fungi, but none were found and, on culturing, only staphylococci were obtained.

On December 1, 1931, the right leg was amputated about the junction of the middle and lower thirds, because of the tumor. The pathological report of Dr. M. R. Warden, pathologist to St. Joseph's Haspital, on this specimen is as follows:

Fig. 3

Gross Description: The right leg has been amputated 18 cm. above the ankle joint. On the lateral aspect of the foot there is a large tumor mass which is elevated about 3.5 cm. above the general level of the skin surface, and which measures 13 cm. in diameter. The posterior border of the tumor mass projects about 1.5 cm. beyond the posterior border of the heel and its inferior border extends about 8 mm. below the level of the bottom of the heel. Its upper border extends slightly above the ankle joint, and its anterior border occupies about the level of a plane through the joint between the talus and the navicular. A considerable portion of the surface of the tumor mass is covered by a black, dried crust. The greater portion of the remainder of the surface is covered by yellowish material resembling pus. When the pus is washed off, a portion of the surface appears to be covered by the skin; the other portions appear to have no epithelial covering. The foot itself is about one-half covered by elevated, confluent, scaly lesions. These lesions are present especially on the sole, the plantar and lateral side of the heel, over the dorsal surface of the toes, and in a large patch over the instep. When some of the crusted, scaly lesions are scraped off, skin which appears normal except for slight reddening, is found beneath them. A culture, taken under sterile conditions from a piece of tissue removed from the center of the tumor mass, yields a growth of staphylococci. When the tumor mass is incised, rather friable, gray tissue is revealed. The tumor has revealed the calcaneus, which can be cut rather readily with a knife."

Microscopic Description: In stained microscopic sections of the large tumor mass on the side of the foot, solid masses of epithelial cells are seen within a connective-tissue stroma. At the centers of some of the masses, cell bodies are seen which take no nuclear stain. These have the appearance of areas of necrosis. The epithelial cells within the masses are large and polygonal and contain rather large, deeply-staining nuclei. Within some, mitotic figures are seen. These, however, are not numerous. The stroma shows considerable round-cell infiltration. Epithelial pearls are not seen.

"In sections cut at right angles to the surface of

portions of the skin taken from the scaly region on the dorsum of the foot, and stained with hematoxylin and eosin, the stratum corneum is found to be abnormally thick. In it are seen numerous narrow slits, or clear spaces, arranged, for the most part, nearly parallel with the skin surface. These give this layer the appearance of having been divided into an interlacing network of bundles, which lie parallel with the surface of the skin. In the outer portion of this layer, a few nuclei are still visible, and the layer as a whole tends to take on a bluish tint with the hematoxylin. No definite stratum lucidum is recognized. A stratum granulosum is present. In the rete mucosum, the rete pegs are seen to be elongated. That portion of the rete covering the papillae, however, is seen in many places to be quite thin. The corium is composed of quite dense connective tissue, within which numerous small blood vessels are seen in longitudinal section. Very few granular structures, and no hair follicles, are seen. Little, if any, cellular infiltration is present. There does appear, however, to be slight infiltration by lymphoid cells in the perivascular region. The microscopic picture thus corresponds with that of psoriasis.

"Final Pathological Diagnosis: Epithelioma of the skin of the right foot, with direct extension to the bone of the calcaneus. Psoriasis."

The only treatment of the skin undertaken was an x-ray exposure of the hands and petrolatum to all the affected skin, which, after getting well saturated, peeled off but with some difficulty. The patient made an uneventful recovery from the amputation and was discharged from the hospital on December 15, 1931. He returned at once to his home, since when we have not seen him, but we wrote him inquiring as to his present condition and on November 10. 1932, had a letter from him in which he stated that his skin condition was unchanged—both the hands, which were treated with x-ray, and the one remaining foot and the back, being involved as before. He said that his stump had healed up entirely and that as yet he was without evidence of other tumors or other symptoms, that he could note, of secondary carcinoma.

The lesions on this man's skin had no resemblance to ordinary psoriasis, with which we are all familiar, nor very much to any other condition which we had ever seen. So we searched all the books we had at hand and made a tentative diagnosis of the rupioid type of psoriasis, particularly through Ormsby's[1] description, together with his cut picturing rupioid psoriasis of the elbow. Later, we were able to get the histological report. While the histological picture is that of psoriasis, the crusts are entirely unlike those of ordinary psoriasis. Instead of the small, whitish, loosely adherent scales of the ordinary type of psoriasis, there were large, adherent, confluent, yellowish scales which were quite unlike any of the usual forms of psoriasis.

This form of psoriasis was apparently first described by Dr. McCall Anderson[2] of Glasgow, in 1865, and was given the name of psoriasis rupioides, by which it has since been known. We quote as follows from his description:

"There is a peculiar appearance which psoriasis sometimes assumes, which I first observed a good many years ago, and which has never been described. When it occurs it may be regarded as a stage intervening between the so-called psoriasis guttata and nummularis. In it the accumulation of epidermis takes place to an unusual extent, so that on many of the patches it assumes the shape of large conical crusts marked by concentric rings. In fact, they exactly resemble in shape limpet shells and from their likeness to crusts or rupia I have called this variety psoriasis rupioides. Except in the shape of the crusts, however, there is no connection whatever with rupia, and, on removing a crust, there is no ulceration beneath; but a slightly elevated, dusky-red, rounded surface is exposed to view, which sometimes bleeds a very little."

Nearly all textbooks on skin mention this subvariety of psoriasis but devote only a line or two to it and state that it is very rare. Various authorities mention that it is apt to be symmetrical in its manifestation, as is characteristic of all psoriasis and which is true of our case. Our case is rather unusual in its distribution, in that the palms and soles are involved, which is unusual for psoriasis. Dr. Pearson[3] reports a case of rupioid psoriasis with palmar involvement, and makes the following comment:

"It is now (1886) almost universally acknowledged by dermatologists that non-syphilitic palmar psoriasis is of extremely rare occurrence—most, if not all of the cases formerly described as such being examples of squamous eczema. That, however, the palms may in exceptional cases be attacked with true psoriasis, must, I think, be admitted as illustrated in the present instance. When, however, such an occurrence takes place, the disease is never limited to that region exclusively."

Reimans[4] states in his Pathology, 1929 edition: "The soles of the feet, the palms of the hands, even in universal psoriasis, remain free in the great majority of cases, but more recent investigations seem to show that these situations are more frequently involved than was previously thought."

Dr. C. Audry[5] reports a case which he diagnoses

as rupioid psoriasis and which he reports as involving the backs of both hands in a young man of twenty years of age. He gives a rather similar histological picture to what we have found.

Hallopeau and Lemierre[8] report a case of typical rupioid psoriasis except that in places there was a slight moist secretion. Then in the Clinical Notes of the Lancet, a case of Dr. F. Buzzard's[9] is reported which is quite typical. He reports temporary clearing up of the lesions with alkaline baths, apparently due to the softening effect on the hard-crusted lesions.

In Guy's Hospital Reports[8] are reported two cases diagnosed as rupioid psoriasis, one a boy, but the age not given, and the other a girl of four years of age. This age is still younger than that of our case, in which the onset was given by the patient as six years. In both of these cases, the typical crusts were described, but apparently no histological examination was made. The treatment of the second case is reported as the giving of Fowler's solution internally and the application of picis unguent to the lesions, with temporary removal of most of the crusts. The result was ascribed to the Fowler's solution, but, with our experience, we should be inclined to give the credit to the picis unguent.

In the differential diagnosis, the following conditions must be considered:

1. Syphilitic psoriasis or syphilitic rupia, so-called, which typically involves the palms and soles, must be first considered, but the negative Wassermann, together with the length of time the condition has been present with otherwise good health and lack of other stigma, rules this out.

2. Parapsoriasis is a quite different condition, with relatively flat superficial lesions—some of which are papular. They are always discreet and scattered over both the trunk and limbs.

3. Squamous eczema is marked by more or less redness, infiltration, and exfoliation of the skin with small, thin, whitish scales, and eczema sclerosum, which is frequently observed upon the palmar and plantar surfaces, presents a densely thickened inelastic integument, suggesting the condition of tanned leather.

4. The second stage of mycosis fungoides is eliminated by the length of time the condition has been present without change.

5. Arsenical keratoses are small-shot-sized horny elevations like small corns, which appear on the palms and soles, and which occur only after prolonged use of arsenic, which does not appear to have ever been taken by our patient.

6. Hyperkeratosis of soles and palms is limited to these surfaces and does not form crusts.

7. Lupus vulgaris is eliminated by the long period without change and the symmetrical development of the lesions.

In a personal communication from Dr. G. P. Lingenfelter, of the Department of Skin, of the University of Colorado Medical College, he suggests that, in the differential diagnosis, the following, as well, should be considered:

8. Dermatitis vegetans is characterized by vegetative plaques, which may occur in various parts of the body and follow an inflammatory condition. The apparent total lack of dermatitis at any time apparently rules this out.

9. Fungus or vegetable parasitic diseases, for which careful search was made without any being found. These conditions do not show the constancy of the lesions of our case.

10. Pellagra, which has other manifestations which are entirely absent from this case.

11. Keratosis blennorrhagica, the lesions of which are somewhat similar as described by Hazen[7], but it is caused by gonorrheal infection, of which there is no history, and the age of onset makes this improbable. Besides, Hazen states that spontaneous recovery occurs.

The development of a malignant lesion on the site of a psoriasis lesion has been reported quite a few times in the literature but no large number of such cases have as yet been recorded.

Hartzell[10], in 1899, seems to have been the first man to have made a study of such cases. He reports a case of his own, a woman of thirty-five years of age who had had psoriasis since fifteen years of age. She had had arsenic in large doses and arsenical keratoses developed, on which several rodent ulcers developed, the first one being on one of the heels. He collects ten cases, which were all he was able to find in the literature, and carefully analyzes them, with the following comments: "In all of them the psoriasis, which at first presented the ordinary type of eruption, was of long standing, usually many years; in all but three, some form of keratosis was a marked feature, appearing after a variable period, most frequently upon the palms and soles in the shape of corn-like excrescences, and, finally, cancerous ulceration, beginning beneath one or more of these horny excrescences, occurred. In all in which any mention is made of the treatment of the psoriasis—eight out of the eleven—arsenic had been giv-

en in considerable quantity for a long period and, in view of its almost universal use in this malady (1899), its administration in the remaining three cannot be positively excluded." He then goes on to discuss the frequency of the development of carcinoma from arsenical keratosis lesions not associated with psoriasis, and draws the conclusion that the arsenical keratoses alone are responsible for the development of the carcinoma.

Gray[11] in 1912 reports a case of his own of rodent ulcer occurring in a woman who had had psoriasis for thirty-two years and who had had various kinds of treatment, including arsenic. A lump was noticed ten years previously. Three years previously it had ulcerated and lupus was diagnosed. X-ray and radium were applied without relief, so excision of the lesion was done, and a pathological diagnosis of epithelioma was made.

Flint and Gordon[12] report a patient of theirs with a squamous carcinoma of the scalp and two rodent ulcers on the shoulder. The scalp malignancy was on the seat of an injury, but those on the shoulder were on psoriasis lesions, with which the patient had suffered for twenty years. They do not state what treatment the case had received for the psoriasis.

Sequeira[13] states in his textbook (1927 edition) that he has had under his care several cases of multiple superficial rodent ulcers arising in patches of psoriasis.

Arthur Alexander[14] assembled in 1920 seventeen case reports in the literature, and reports one case of his own of a cancerous lesion developing on a psoriasis lesion. Of these, he considered eleven as malignant degenerations of arsenical hyperkeratosis or arsenical carcinomas on a psoriatic base. The remaining seven he considered to be pure psoriasis carcinoma with the psoriasis lesions converted to cancer directly.

It would seem probable, in view of our modern theories of malignant degeneration, that psoriasis lesions should be more prone to develop malignancy. The common use of severe escharotics, such as chrysarobin and salicylic acid, on chronic lesions, should favor this as well. Then tar ointment is a favorite remedy and it is well-known that tar workers are quite prone to develop carcinoma, so this may be a factor in some cases.

Since the advent of the x-ray and its use for the treatment of all kinds of skin lesions, it has been found that skin which has received large doses of x-rays is more subject to the development of malignancy. This is quite prone to occur where x-ray burns have been produced. Psoriasis lesions offer somewhat analogous conditions of cell growth, so that, conceivably, less x-ray than that sufficient to cause x-ray burns or radio dermatitis, might cause malignancy to develop on psoriatic skin.

X-ray is now universally used, by almost everyone who has an x-ray machine, for the treatment of psoriasis, because of the well-known fact that it will usually cause a rapid and spectacular disappearance of the lesions. The disappearance, however, is only temporary, so that repeated x-ray exposures may be made over a long period of time in this disease, in which it is said that, "once a psoriatic, always a psoriatic," by men who do not appreciate the dangers of over exposure or by different men in succession treating the case and who do not know what treatment has preceded theirs.

Goodman and Price[15] report a case of multiple carcinoma developing in a woman of forty-five, who gave a history of psoriasis for thirty years with a series of x-ray treatments six years previously and again four years previously. Radio dermatitis resulted from the second series of treatments. Then, rodent ulcers formed, first on an arm and then on a leg. They sound a warning that too many x-ray treatments are being given. They conclude that the psoriatic skin has some feature of unrest which makes it more subject to malignancy and that the added irritation of arsenic, or of the reducing agents used in salves, or the x-ray or radium, may initiate changes leading to cancer-cell proliferation. They conclude that no patient should receive more than six x-ray treatments in a series and quote MacKee as limiting the series to three treatments at weekly intervals. They ask the question whether one should treat with x-ray psoriasis which has once been treated and has recurred. Certainly, in the light of their case report, it may be dangerous and should probably be attempted only when the previous dosage of x-ray given is known, so that it can be determined if it is probable that more x-ray exposure can be given with safety.

SUMMARY

A case of rupioid psoriasis with epithelioma developing from it, is reported, together with a discussion of the rupioid form of psoriasis and the formation of cancerous lesions from the lesions of all forms of psoriasis.

CONCLUSIONS

1. In the lesions of psoriasis, there seems to be a condition of cell unrest or sensitivity which develops into a carcinomatous lesion more readily than in normal skin.

2. Due to this sensitivity of psoriatic skin, ar-

senic, which also makes for cancer susceptibility, should be very cautiously used, and perhaps other skin irritants as well.

3. X-rays, which in too large doses tend to cause carcinoma, will probably do so still more readily on a psoriasis lesion, necessitating caution in its treatment by this means.

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ALLERGY IN TUBERCULOSIS: A STUDY OF TWENTY CASES

BASIL THOMPSON, M. D.
Tucson, Arizona

The inoculation of specific allergens has been widely utilized in the treatment of asthma, vasomotor rhinitis, migraine, and various types of dermatitis, even when they concurred with active pulmonary tuberculosis. Kahn[1] and other writers have noted, in such cases, improvement of the lungs following attempted desensitization, or the elimination of extrinsic causative allergens. The repeated inoculation of living or dead tubercle bacilli or their dissociated products has comprised a popular treatment of pulmonary tuberculosis for many years. However, as far as is known, the inoculation of specific antigens, other than those of the tubercle bacillus, has never been used in the treatmet of pulmonary tuberculosis uncomplicated by the above-mentioned allergic manifestations, prior to the time of a preliminary report by the writer in November, 1932.[2]

Lewis and Loomis[3] have stated, "It is evident that in tuberculosis that character which is designated as 'allergic irritability' is high with respect to an antigen that is not related to the tubercle bacillus." Apparently they did not attach important clinical significance to this finding.

Is there any chemical relationship between proteins involved in recognized allergic manifestations? Seibert,[4] in an analysis of the tubercle bacillus, found that a crystalline, water-soluble fraction, which gave positive tests for protein, had the power of producing a marked skin reaction in tuberculous guinea pigs and none in normals. Stull, Cooke and Chobot[5] have extracted from Ambrosia trifida pollen a water-soluble, heat-coagulable protein, which is capable of producing allergic skin reactions in sensitive individuals. Coca[6] has shown that the dializable excitants in egg white are native proteins of antigenic capacity. However, Bouillenne and Bouillenne[7] have indicated that, in ragweed pollen at least, there is no relation between the antigenic activity and the nitrogen content. From the exhaustive analytical work done on the se antigens, of the tubercle bacillus, ragweed pollen, and egg white, only one surmise yet suggests itself: namely, that the antigen contained in each substance is itself protein in nature, or it is precipitated with this protein in chemical reactions.

In pulmonary tuberculosis, the opinions of investigators are contradictory regarding the relation of tuberculo-allergy to immunity. Pinner[8] has stated that immunity and allergy, methodologically speaking, are non-comparable conditions: one, an abstraction of teleological thinking; the other, an abstraction of causative thinking. However, many writers after extensive experimentation do form definite conclusions regarding the role of allergy in tuberculosis. Rich and Lewis[9] and Rich and McCordock[10], and others, have concluded that a high degree of allergy is harmful to the infected body. Krause[11],

TABLE: EFFECT OF ATTEMPTED DESENSITIZATION IN TUBERCULOSIS

Case Number	Sex	Age in Years	Diagnosis	Duration of Tuberculosis	Period of inoculation: Began	Period of inoculation: Time Results Recorded	Symptoms: Cough: At Start	Symptoms: Cough: At End	Symptoms: Sputum in 24 hours: At Start	Symptoms: Sputum in 24 hours: At End	Symptoms: Dyspnea: At Start	Symptoms: Dyspnea: At End	Afternoon Temperature: At Start	Afternoon Temperature: At End	Results
1	F	42	Advanced pulmonary T. B. with cavitation	9 yrs.	6-8-1931	6-15-1931	Moderate contin.	None	1 dr.	None	Severe	None	98.6	98.6	Relief of symptoms
2	M	31	Advanced pulmonary T. B. with cavitation and bronchial asthma	11 yrs.	2-21-1932	4-23-1932	Severe contin.	Slight occas.	2 oz.	½ dr.	Severe	None	99. to 99.2	98.2	Symptomatic improvement
3	M	39	Advanced pulmonary T. B.	4 yrs.	6-6-1932	6-30-1932	Slight occas.	None	1 dr.	None	Severe	None	98.4	98.6	Relief of symptoms
4	M	39	Advanced pulmonary T. B. with cavitation	2 yrs.	7-5-1932	7-19-1932	Slight contin.	Slight occas.	6 dr.	½ dr.	Moderate	None	99.0 to 99.6	98.6	Symptomatic improvement
5	M	46	Advanced pulmonary T. B. with cavitation	5 yrs.	7-12-1932	7-21-1932	Severe contin.	Slight occas.	2 oz.	1 to 2 dr.	Slight	None	98.6	98.6	Symptomatic improvement
6	M	34	Advanced pulmonary T. B. with cavitation	12 yrs.	7-14-1932	7-19-1932	Slight contin.	Slight occas.	1 to 2 oz.	1 dr.	Slight	None	98.0	98.2	Symptomatic improvement
7	F	38	Moderately advanced pulmonary T. B.	2 yrs.	7-14-1932	7-21-1932	Severe contin.	Slight occas.	1 oz.	½ dr.	Severe	None	99.0	98.6	Symptomatic improvement
8	M	28	Advanced pulmonary T. B. with cavitation	4 yrs.	7-14-1932	7-20-1932	Slight occas.	None	1 dr.	None	Slight	None	98.6	98.6	Relief of symptoms
9	F	32	Moderately advanced pulmonary T. B.	2 yrs.	7-15-1932	7-19-1932	Severe contin.	None	1 dr.	None	Moderate	None	98.2	98.4	Relief of symptoms
10	F	30	Moderately advanced pulmonary T. B.	1½ yrs.	7-23-1932	7-26-1932	Slight occas.	None	2 dr.	None	Severe	None	98.6	98.6	Relief of symptoms
11	M	40	Advanced pulmonary T. B. with cavitation	7 yrs.	11-4-1932	11-7-1932	Severe contin.	Slight occas.	5 oz.	1 oz.	Severe	Slight	99.4	98.2	Symptomatic improvement
12	M	31	Advanced pulmonary T. B. with cavitation	1½ yrs.	9-30-1932	10-7-1932	Severe contin.	Slight occas.	6 oz.	1½ oz.	Slight	None	101.4	99.0	Symptomatic improvement
13	M	29	Advanced pulmonary T. B. with massive bilateral cavitation	3 yrs.	10-28-1932	11-11-1932	Severe contin.	Slight contin.	3 oz.	1½ oz.	Severe	Slight	101.4	100.6	Symptomatic improvement
14	M	11	Active incipient pulmonary T. B.	1 yr.	10-19-1932	10-27-1932	Slight occas.	None	1 dr.	None	None	None	99.2	98.4	Relief of symptoms
15	M	9	Moderately advanced pulmonary T. B.	1 yr.	5-21-1932	5-28-1932	Slight occas.	None	½ dr.	None	Slight	None	98.4	98.4	Relief of symptoms
16	F	21	Advanced pulmonary T. B. with cavitation	2 yrs.	12-5-1932	12-17-1932	Severe contin.	Slight occas.	2 oz.	1½ dr.	Slight	None	99.6 to 101.0	98.6	Symptomatic improvement
17	M	38	Advanced pulmonary T. B. with cavitation	20 yrs.	12-16-1932	12-27-1932	Severe contin.	Slight occas.	1 oz.	½ oz.	Severe	None	99.2	98.4	Symptomatic improvement
18	M	27	Advanced pulmonary T. B. with cavitation	4½ yrs.	12-13-1932	12-26-1932	Severe contin.	Slight occas.	1 oz.	2 dr.	Slight	None	98.6	98.6	Symptomatic improvement
19	F	22	Incipient pulmonary T. B.	½ yr.	10-14-1932	10-25-1932	Slight contin.	None	2 dr.	None	None	None	98.6	98.6	Relief of symptoms
20	M	32	Advanced pulmonary T. B.	13 yrs.	10-3-1932	10-11-1932	Slight contin.	None	½ dr.	None	Severe occas.	None	99.4	98.4	Relief of symptoms

on the other hand, has stated that acute inflammation, due to an allergic response of the tissue cells, tends to kill, disintegrate, and limit the infecting tubercle bacilli, provided this allergic reaction itself is not fatal to the infected body.

The allergic reaction in tuberculosis may produce two types of symptoms[3]: First type: Symptoms due to contraction of smooth muscle fibres—particularly those of the bronchial or vascular musculature. Second type: Symptoms due to local damage or death of tissue, accompanied by acute inflammation.

In the present study, cough and dyspnea, two prominent symptoms of the first, spasmotic type, and sputum and temperature, two symptoms of the second, inflammatory type, were considered as criteria of symptomatic progress in twenty cases of active chronic pulmonary tuberculosis. (See Table.)

METHOD OF EXPERIMENT

Twenty cases of active pulmonary tuberculosis were skin tested by the cutaneous method and by the intradermal method, utilizing extracts of one hundred and forty different antigens. The list of allergens used in testing comprised food, epidermals, pollens, dusts, and bacterial proteins—in fact, every protein of known possible allergic significance—which may have contacted the body tissues of these cases by ingestion or inhalation. Only one patient (Case 1 in the Table) gave a strongly positive reaction to several allergens by cutaneous tests. This case gave a history of perennial bronchial asthma and vasomotor rhinitis of many years' duration. The remaining nineteen cases, whose histories were negative for allergic disease, gave weak to moderately strong positive reactions to one or more allergens.

Increasing quantities of those anitgens which showed even a weakly positive reaction to intradermal tests, were then injected daily for three days, every other day for three times, and finally at longer intervals, over the period of time mentioned in the table.

Of these twenty unselected cases of active chronic pulmonary tuberculosis, fourteen cases had retrogressed, and six cases had remained clinically stationary, during the six-months period prior to the beginning of attempted desensitization, under a regime of rest, hygienic, dietary, and conservative symptomatic treatment. Of this series, twelve, on radiographic and physical examination, showed advanced involvement with cavitation; two showed advanced involvement without cavitation; four had moderately advanced disease; and two had indications of incipient tuberculosis. Of these cases, seven had been diagnosed tuberculous for a period of five years or more; eleven had been diagnosed for a period of from one to five years; and two had a duration of less than one year.

RESULTS OF EXPERIMENT

Of this series of twenty cases of active chronic pulmonary tuberculosis treated by antigen inoculation, eleven showed symptomatic improvement in an average period of 14 1-5 days; nine cases were relieved of symptoms in an average period of 8½ days. In all cases, excepting one (Number 13 in theTable), attempted desensitization was followed by improvement in the objective chest findings.

Local or general allergic reactions were noted following the inoculation of allergens in all the described cases Four (Numbers 7, 13, 18, and 20 in the Table) developed a moderate urticaria at all previous points of injection, when their maximum dosage had apparently been reached. The most common general reaction was an increase in cough and sputum immediately following the inoculation, persisting from one hour to two days. In not a single case did the symptoms of a general allergic reaction exceed in severity the symptoms persisting prior to the beginning of the desensitization treatment. In every case, a marked local or general reaction was followed by a decided symptomatic improvement.

Three cases (Numbers 8, 9, and 10) discontinued antigen inoculation at the time results were recorded in the Table and have been observed for a period of six months since that date. In one case, Number 8, the symptoms began to recur about one and one-half months after desensitization treatment had been discontinued. Cases 9 and 10 have not yet developed a recurrence of symptoms.

The periodic inoculation of allergens has been continued in the remaining seventeen cases for an average period of six months. Sixteen of these cases have continued to make progressive symptomatic improvement.

One case, Number 13, at the time attempted desensitization was started, evidenced massive bilateral cavitation, marked signs of activity throughout the entire chest excepting the right base, and blood sedimentation, by the Westergren method, of 70 millimeters per hour. This patient, who gave weakly positive reactions to several allergens, showed only transient symptomatic change when massive doses of these antigens were administered. Improvement in cough and sputum in this case was not accompanied by a marked drop in temperature or alteration in the objective chest finding.

CONCLUSION

Chronic pulmonary tuberculosis may be a scaven-

ger infection, progressing only in tissues rendered hypersensitive and inflamed, by a variety of extrinsic and intrinsic allergens; or, tuberculosis may be a primary infection of the tubercle bacillus, producing a hypersensitivity, not only to the tubercle bacillus itself, but to other allergens; and the repeated inoculation of these allergens, by crossed reaction, may produce a tissue immunity against the tuberculous infection.

Unfortunately, a record of the alteration in tuberculin sensitivity, blood-sedimentation time, tubercle bacilli in the sputum, and radiographic findings, was not available in all the cases in the present study. The effect of attempted desensitization on these findings, in a large series of cases, will be of interest.

This experiment suggests a mode of investigation and treatment in those cases of pulmonary tuberculosis which have failed to respond to the time-tested conservative methods. Its trial does not contraindicate the continuance of conventional therapeutics. By relieving irritative symptoms, with the object of putting the chest at rest, it may, however, be possible to shorten the period of tuberculous activity.

I wish to acknowledge the assistance rendered by the Abbott Laboratories and E. R. Squibb and Sons in furnishing, respectively, testing and treatment allergen solutions used in this work.

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NEW MEMBERS IN EL PASO COUNTY MEDICAL SOCIETY.

In January the following new members were received into the El Paso County Medical Society:

Dr. L. O. Dutton is to be associated with Drs. Cathcart and Mason, practicing the specialty of radiology.

Dr. Thomas Waggoner, who is to be connected with the El Paso City Health Department as school physician.

Dr. Reuben Rodarte, who is to be associated with his father (Dr. D. Rodarte), in the general practice of medicine.

THE MEDICAL CLINICS OF NORTH AMERICA, September, 1932; Volume 16; Number Two; Chicago Number; Philadelphia and London; W. B. Saunders Company.

The Chicago number of the Medical Clinics is always highly interesting and instructive. This one is no exception to the rule. The several articles on hypertension are of particular interest and value to the general practitioner and to the internist. Perhaps one of the most valuable articles in this issue is the one on "Alkalosis," by Dr. James G. Carr. There are other articles which may interest other physicians as much as this one on alkalosis interests the reviewer. O. H. B.

EL PASO COUNTY MEDICAL SOCIETY

January 9, 1933

(Reported by Leslie M. Smith, M. D., Sec'y.)

El Paso County Medical Society met January 9, 1933, at 8 p. m., with Dr. F. D. Garrett presiding.

The election of officers which was begun in December was comlpeted by the following:

Dr. H. T. Safford was elected Censor by acclimation to take the place of Dr. G. Werley, whose term expired.

Dr. J. Mott Rawlings was re-elected librarian.

Dr. W. E. Vandevere was elected Associate Editor of Southwestern Medicine.

Dr. E. C. Prentiss was re-elected a delegate to the American Association for the Advancement of Science.

On motion of Dr. McCamant, Dr. E. C. Prentiss, who has been ill for some time, was made a member in good standing.

Dr. J. A. Pickett, the newly elected president,

(Continued on page 109)

Southwestern Medicine

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Forty-second Annual Meeting Arizona State Medical Association Tucson, April 20, 21 and 22

Registration and headquarters will be at the Santa Rita Hotel. Every member, guest and visitor is requested to register promptly on arrival.

Scientific sessions, commercial exhibits and scientific exhibits will be in the Scottish Rite Auditorium.

No address or paper before the Association, except those of invited guests, are expected to occupy more than twenty minutes. The opening discussions are limited to five minutes and general discussions to three minutes. No one shall speak more than twice on the same subject.

All authors are expected to deposit manuscript of papers or addresses with the secretary. These are the property of the Association and will be published in the official organ of the Association (Southwestern Medicine).

For the social entertainments, see the announcements in the printed program.

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PROGRAM

THURSDAY, 10 a. m.

Invocation.
REV. E. C. TUTHILL - - - - - - - Tucson

Address of Welcome
MAYOR G. K. SMITH - - - - - - - Tucson

Response
DR. JOHN E. BACON.

Introduction of President-Elect.

President's Address:
N. C. BLEDSOE - - - - - - - - - Tucson

HARRY A. REESE - - - - - Yuma, Arizona
"Tularemia."
Discussion opened by
ROLAND DAVISON, Tucson.

ALBERT SOILAND (Guest) - - Los Angeles, Calif.
"Diagnosis and Treatment of Cancer of the Breast."
Discussion opened by
E. PAYNE PALMER, Phoenix.

W. WARNER WATKINS - - - Phoenix, Arizona
"Roentgen Therapy of Inflammation."
Discussion.

R. J. STROUD - - - - - - - - Tempe, Arizona
"The New Experiment,—A Viewpoint."
Discussion opened by
W. W. WATKINS, Phoenix.

FORREST E. DOUCETTE (Guest) - Phoenix, Arizona
"Public Health and Medical Co-operation."
Discussion opened by
GEORGE TRUMAN, Mesa.

HAL RICE - - - - - - - Morenci, Arizona
"Gas Gangrene."
Discussion opened by
VICTOR GORE, Tucson.

E. A. GATTERDAM - - - - - - Phoenix, Arizona
"Oral Administration of Pollen Extract in Hay Fever Therapy."
Discussion opened by
ORVILLE H. BROWN, Phoenix.

FRIDAY MORNING, 10 a. m.

JOHN W. PENNINGTON - - Phoenix, Arizona
"Gonorrhea and Its Complications in the Male."
Discussion opened by
THOS. W. WOODMAN, Phoenix.

Symposium on Prostatic Disease.

FRANKLIN FORMAN (Guest) - Los Angeles, Calif.
"Prostatitis."

G. J. THOMPSON, Mayo Clinic, Rochester, Minn. (Guest)
"Prostatic Resection in Poor Risk Patients."

W. G. SHULTZ - - - - - - - Tucson, Arizona
"Moving Picture Demonstration of Prostatic Resection."
Discussion on the above three papers opened by
DAVID M. DAVIS, Phoenix.

JAMES A. DICKSON, Cleveland Clinic, Cleveland, O. (Guest)
"Periarthritis of the Shoulder: An Analysis of Two Hundred Cases."
Discussion opened by
PAUL W. HOLBROOK, Tucson.

H. L. FRANKLIN - - - - - Phoenix, Arizona
"Refractive Errors and Their Relation to General Medicine."
Discussion opened by
A. E. CRUTHIRDS, Bisbee.

EMIL C. HOULE - - - - - - Nogales, Arizona
"Belated Treatment of Sequelae of Diphtheria."
Discussion opened by
C. V. BARLEY, Tucson.

L. B. BALDWIN - - - - - Phoenix, Arizona
"Hypertension: Some Clinical Aspects."
Discussion opened by
A. K. DUNCAN, Douglas.

HOWELL RANDOLPH, - - - - Phoenix, Arizona
"The Mechanism of the Heart Beat and Electrocardiography."
(Moving Picture Film from Lahey Clinic.)
Discussion opened by
S. C. DAVIS, Tucson.

SATURDAY MORNING, 9 a. m.

JOHN W. FLINN - - - - Prescott, Arizona
"The Treatment of Bone and Joint Tuberculosis."
Discussion opened by
SAMUEL H. WATSON, Tucson.

WALTER P. SHERRILL - - - Phoenix, Arizona
"Tuberculosis from the Standpoint of the Pediatrician."
Discussion opened by
FRED G. HOLMES, Phoenix.

VICTOR RANDOLPH - - - - Phoenix, Arizona
"Surgical Treatment of Pulmonary Cavities in Tuberculosis."
Discussion opened by
MEADE CLYNE, Tucson.

A. P. KIMBALL - - - - - - - - Yuma, Arizona
"Problems and Management of Gall Bladder Disease."
Discussion opened by
W. O. SWEEK, Phoenix.

ROBERT ALLEN HICKS (Guest) - Tucson, Arizona
"A Program Chart for the Study of Pulmonary Tuberculosis as Elaborated at the Southern Pacific Sanatorium."
Discussion opened by
C. A. THOMAS, Tucson.

CLARA S. WEBSTER - - - - Tucson, Arizona
"Congenital Hypoplasia in Women."
Discussion opened by
MEADE CLYNE, Tucson.

WILLIAM I. LINN

(Prescott, Ariz.)

With the passing of Dr. W. I. Linn, of Prescott, on February 17th, one of the few remaining pioneer physicians of Arizona went to his eternal reward. Dr. Linn was born in 1856, being seventy-seven years of age at the time of his death. He graduated from Columbus Medical College in Ohio in 1882. His early years of practice were in Nebraska. He came to Arizona in 1905 and practiced continually in Prescott since that time.

The Yavapai County Medical Society passed the following resolutions:

February 18, 1933.

WHEREAS, Death has claimed Dr. William I. Linn, a pioneer physician of Nebraska and Arizona, having practiced in Prescott, Arizona, for nearly thirty years, and one of the first members of the Yavapai County Medical Society and its president in 1911;

AND WHEREAS, In life he was revered by his patients because of his kindly and sympathetic manner and loyalty;

AND WHEREAS, His unselfish devotion to his profession prompted him to serve suffering humanity often at the expense of his own physical welfare;

THEREFORE, BE IT RESOLVED; That his passing registers the loss of a pioneer physician, a loyal friend, a useful citizen and one truly devoted to his family and his profession;

AND THAT we, the members of the Yavapai County Medical Society, join with the members of his family, his patients, his friends and citizens of this community in our mutual sorrows;

AND THAT the heartfelt sympathy and condolence of this Society be extended to his family;

AND THAT the Society attend his funeral in a body;

And THAT these resolutions be spread on the minutes of this Society, a copy sent to the grieving family, and copies furnished the Southwestern Medicine and the Journal of the American Medical Association.

PIERCE M. BUTLER

(Winkelman, Ariz.)

On the evening of February 24th, Dr. Pierce M. Butler of Winkelman, Ariz., was accidentally electrocuted. He was found in the morning with a table lamp grasped in the hand and evidences of fatal electric shock. Dr. Butler was born in Tennessee in 1866, being sixty--seven years of age at the time of death. He graduated from Bellevue Hospital Medical College, of New York in 1893. He came to Arizona in 1903 and for thirty years, quietly and unobtrusively, he practiced in the small mining com-

munities in Winkelman and vicinity. He rarely appeared in medical meetings, though he maintained membership in the Maricopa County Medical Society through many years. He is of the type of doctor, all too infrequently found, content to serve in a small community, the friend and counselor of everybody. Medical societies may not miss him, but his place will be difficult to fill in the hearts of his neighbors.

JOHN COOK

(Douglas, Ariz.)

In the death of Dr. John Cook, on January 12th, the Cochise County Medical Society (Arizona) lost a valuable and highly esteemed member. Dr. Cook was born in 1872, being sixty years of age at the time of death. He graduated from the Baltimore Medical College in 1902 and located in Douglas, Aris., in 1925, where he practiced the specialty of eye, ear, nose and throat diseases. He was a fellow of the American Medical Association and of the College of Surgeons. The cause of death was carcinoma of the colon.

Resolutions approved by the Cochise County Medical Society at a regular meeting on March 4th, 1933:

WHEREAS, the Supreme Being has seen fit to take from our midst our fellow practitioner and friend, Dr. John Cook, and

WHEREAS, he was a loyal member of the Cochise County Medical Society, a man of undoubted ability in his profession, a gentleman of character beloved by his friends and admired and respected by all who knew him.

THEREFORE, be it resolved that the Cochise County Medical Society does deeply regret his passing and does hereby extend to his daughter and family its deep and sincere sympathy, and

FURTHER, be it rseolved that a copy of this resolution shall be included in the minutes of the Society and copies forwarded to his daughter and to the press.

PUBLIC HEALTH NOTES

J. ROSSLYN EARP, Dr. P. H.
Director New Mexico State Bureau of Public Health

THE DIPHTHERIA CARRIER

No action of the health officer is more frequently or keenly resented than quarantine of the persistent carrier for weeks after the patient has made a clinical recovery. When the family physician cooperates loyally with his public-health colleague, he is in danger of drawing upon himself some part of the resentment. For this situation there are two methods of relief. One is the education of the public so that the carrier and his friends come to understand the need for quarantine. The other is discovery of methods for the more prompt delivery of the carrier from his pathogenic parasites.

A valuable investigation on the diphtheria carrier was carried on through the years 1924-1930 in one of the large hospitals for contagious diseases in London.[1] Between 1924 and 1928 observations were made on 3,208 patients. Of these, 242 persisted as carriers, giving a carrier percentage of 7.5 per cent. The period of infectivity was found to be longer than the average in (a) nose infections and in (b) younger patients.

The next stage was to investigate the methods of treating carriers. More than 1,000 carriers have been studied. It was soon found that the "pure throat carrier" could be promptly freed by tonsillectomy. He is no longer regarded as a problem. The nasal carrier is more difficult to deal with. It is found that, in practically every case of this kind, some pathological process co-exists with the carrier state. Since carriers were found to be Schick negative, a theory was formulated that the diphtheria bacilli live "a saprophytic existence on the pathological mucus and pus." Nasal douching with an alkaline solution twice daily proved to be "very satisfactory" when the patients were cooperative. For those who objected to douching, dimol snuff (30 per cent) was prescribed. The snuff was blown up the nose by means of a De Vilbiss powder blower as often as six times a day, three puffs into each nostril at each treatment. Of the last 200 carriers on this treatment, 60.7 per cent became negative within one week and continued negative for six weeks under observation.

Seven per cent of the carriers proved refractory to varied treatment. All of these had either advanced pathological conditions in the nose or poor general health.

Knowing in advance the type of patient who was likely to become a carrier, the investigators now sought to lessen the carrier incidence by early preventive treatment. By such means the persistent carrier rate was cut down from 7.5 per cent to 2.6 per cent.

THE THICK FILM FOR DIAGNOSIS OF MALARIA

I presume that many of my colleagues in the Southwest were taught, as I was, to look for malaria parasites in the thin blood film. We are out of date. There is no doubt that the thick film method is much more reliable and saves a lot of searching. Unfortunately, it is not yet described in text books

on the Practice of Medicine. Wherefore, I venture to add a brief description from a recent article.[2]

Two or three large drops of blood are spread out to about the size of a dime on a clean dry slide, and care must be taken that no grease from thumb or finger prints underlies the film. The film is then thoroughly dried at room temperature and placed in a Giemsa solution for fifteen minutes to one hour, depending on the strength of the Giemsa stain. This mode of examination will give a certain and positive diagnosis in all cases of acute uncomplicated malaria; and in severe cases in which quinine has been given for two or three days previously, it will show parasites, if these are the cause of the fever.

Dr. James adds a warning that experience is necessary. The beginner with thick films should check positive thin films against thick films from the same case, until he is satisfied of his ability to determine parasites in the latter. "The failure to properly recognize poorly stained films, whether thick or thin, may prove disastrous."

In New Mexico we have malaria well under control at the present tnme, thanks in the main to Doctor Gerber's very thorough work in Dona Ana County. This does not mean that the recognition and reporting of occasional cases is unimportant. On the contrary, it is more than ever important. Early warning to our health department of new foci, or of a recrudescence of infection in old foci, is essential if we are to keep malaria in its present subordinate position amongst our preventable diseases.

REFERENCES

1. Medical Supplement to the Report on the Hospital Services of the London County Council's Annual Report for 1930.

2. James, W. M.: Observations on the diagnosis and treatment of malaria. Twentieth Annual Report, United Fruit Co., Medical Dept. 1931, Page 35.

ARIZONA PUBLIC HEALTH ASSOCIATION

The sixth annual meeting of the Arizona Public Health Association will be held at Tucson on April 17, 18 and 19, the three days immediately preceding the meeting of the State Medical Association. This is arranged so that the health officers may attend both meetings without extra travel expense.

This year special emphasis will be placed upon public health administrations. Among the papers to be presented will be: Dr. K. F. Meyer, University of California, "Certain Aspects of Undulant Fever;" Dr. Vivian Tappan, Desert Sanatorium, Tucson, "Early Diagnosis of Poliomyelitis;" Dr. S. H. James, U. S. Veterans' Hospital, "The Chronic Tuberculous Veteran;" Dr. F. T. Foard, U. S. Public Health Service, and Dr. P. W. Covington, Rockefeller Foundation, will also speak. There will be other papers of

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GROVER SYKES,
Manager

interest on public health nursing and sanitation. All public health nurses and physicians in Arizona are invited to attend these sessions.

GRANT COUNTY (N. M.) MEDICAL SOCIETY

Meeting of Grant County Medical Society, at Officers Club, Fort Bayard, New Mexico, January 27, 1933.

Meeting called to order by Dr. David Kramer, president.

Dr. H. H. McCreary acted as secretary in absence of Dr. Kyllo.

Reading of minutes of meetings of November 18th and December 16th, 1932, were read and approved.

Dr. Kramer made statement about committees. He laid stress on need of good program and entertainment committees. He appointed Dr. Washburn chairman, Dr. Frazin and Dr. Kyllo.

The president made statement about the dues, etc., which are now payable.

No other busines being pertinent, the regular order of business was dispensed with and the papers for the evening were taken up.

Dr. E. J. Cummins, of El Paso, read a paper on "Diagnosis and Management of Biliary Diseases."

Summary: Mild cases of both acute and chronic cholecystitis are frequently difficult to diagnose. Acute attacks will usually subside under medical treatment. Most first attacks and mild cases should be treated medically. Cases which do not respond to medical treatment and should be treated surgically where no contraindication exists. Cholecystostomy still has an important place in the surgical treatment. Cholecstectomy is the operation of choice in most cases. The gallbladder should not be removed until certain that the common duct is open. The common duct should be opened where stones are felt within it, when the gallbladder contains stones and is contracted, when the common duct is dilated, when patient is jaundiced and when head of pancreas is thickened. Gallbladder surgery in the three hospitals in El Paso carried a mortality of slightly over 7 per cent during the past five years and should not be considered lightly.

Dr. N. D. Frazin opened discussion; one should not consider gallbladder surgery lightly. Formerly gallbladders were removed more often and more freely, now the pendulum is swinging the other way.

Dr. Summers also discussed the paper. It was his opinion that whether to remove the gallbladder or not depended upon experience of the operator and the exercise of the best judgment.

Dr. W. L. Brown also discussed paper. The trend of surgery is against the removal of the gallbladder or at least more conservative judgment. Cases of chronic cholecystitits sometimes go suddenly bad and die from rapid blood stream infection.

Dr Cummins closed discussion, answering questions.

Dr. W. L. Brown read paper — "Cancer of Breast." Most interesting paper in this subject and he also showed some slides on the anatomy of the breast and operative procedure.

Discussion opened by Dr. Cummins who stressed early diagnosis.

Discussion by Drs. Frazin, Fahy, McCreary, Summers and Kramer. Closed by Dr. Brown.

Those present were Drs. Kramer, Washburn, Borglum, Sexton, Park, Frazin, Gill, Fahy, Reid, Summers, Johnson, Ray, Wollenman, Latta, Mitchell and McCreary.

Visitors present were Drs. W. L. Brown, Dr. E. J. Cummins and Robert Washburn.

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EL PASO COUNTY MEDICAL SOCIETY

(Continued from page 103)

was introduced and made a short talk expressing his appreciation of his election to this office.

Scientific program: General Discussion of the Causes of Sudden Death:

Heart—Dr. G. Werley. The heart disease of old age is usually arterial disease. A person who dies suddenly dies of failure of circulation. At least one-half of the physicians who died in El Paso in recent years have died of arterial disease. Most of these have been good livers, big eaters and overweight. It probably takes about twenty years to produce a dangerous arteriosclerosis. Abuse of food, both from overeating and through the eating of foods to which the individual is allergic, is a principal cause of arterial disease. Physical and mental strain also contribute to its cause. Tobacco probably has little to do with the cause of cardiovascular disease. It is a great mistake to begin strenuous exercise in middle age. The treatment of arteriosclrosis is a low calory diet, with protein and fat in moderation, avoidance of food idiosyncrasies and avoidance of excessive exercise in middle life.

Gastro-intestinal tract.—Dr. F. D. Garrett. In many of these sudden deaths the principal symptoms are those suggesting acute indigestion, when the real trouble is cardiovascular. Many apparently gastro-intestinal cases are vascular in nature. Pain in the abdomen with difficult breathing should be looked upon as possibly cardiovascular and should be investigated from that standpoint.

Pathology—Dr. W. W. Waite. Sudden death in youth is usually from status lymphaticus. Coronary occlusion and rupture of aneurysm are the principal causes of sudden death. In patients past thirty coronary disease is the usual cause. Rupture of the aorta may be due to slow fatty change.

Status Lymphaticus.—Dr. E. A. Duncan. A general lymphaitc hyperplasia with enlarged thymus and hyperplastic changes in certain vessels of the brain base, is an important cause of sudden death. Symmers found in 8 per cent of his autopsies at Bellevue evidence of status lymphaticus. Death in these cases is often from some trivial shock.

Dr. Paul Rigney inquired as to the relative condition of the blood chemistry in these cases.

Dr. Werley stated that the pain of cardiac infarct comes on suddenly and is steady in character. Pain in the midline extending up into the neck is likely to be cardiac pain. These patients are restless and cannot get comfortable.

Drs. T. L. Waggoner and L. O. Dutton were elected to membership in the Society.

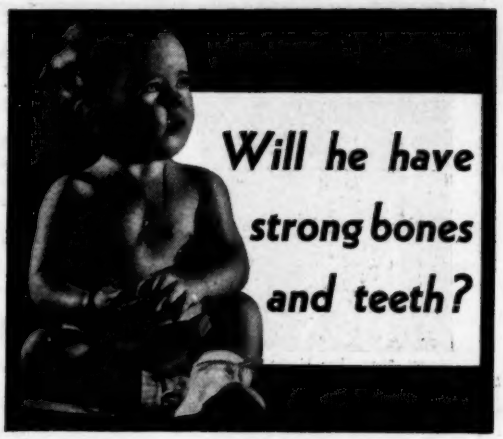
Dr. Pickett made the following appointments:

Program Committee: Dr. A. W. Nulthauf, chairman, to appoint his own committee.

Milk Commission: Drs. J. A. Rawlings, Charles F. Rennick, H. T. Safford, Jr., George Turner and J. T. Bennett.

Councillors: Drs. G. Werley, F. D. Garrett and W. W. Waite.

There being no further business, the meeting adjourned at 9:30 p. m.



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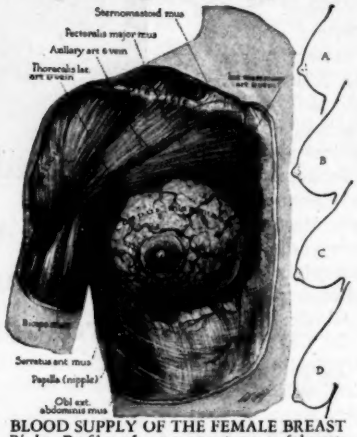
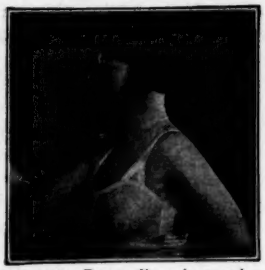


BLOOD SUPPLY OF THE FEMALE BREAST
Right—Profiles of common types of breasts from small breast of young girl to pendulous one of older woman.



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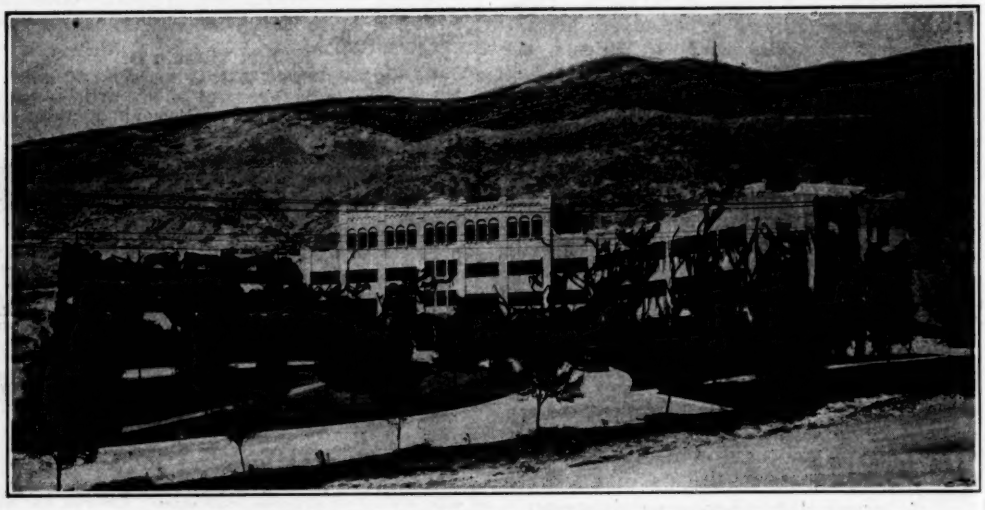

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